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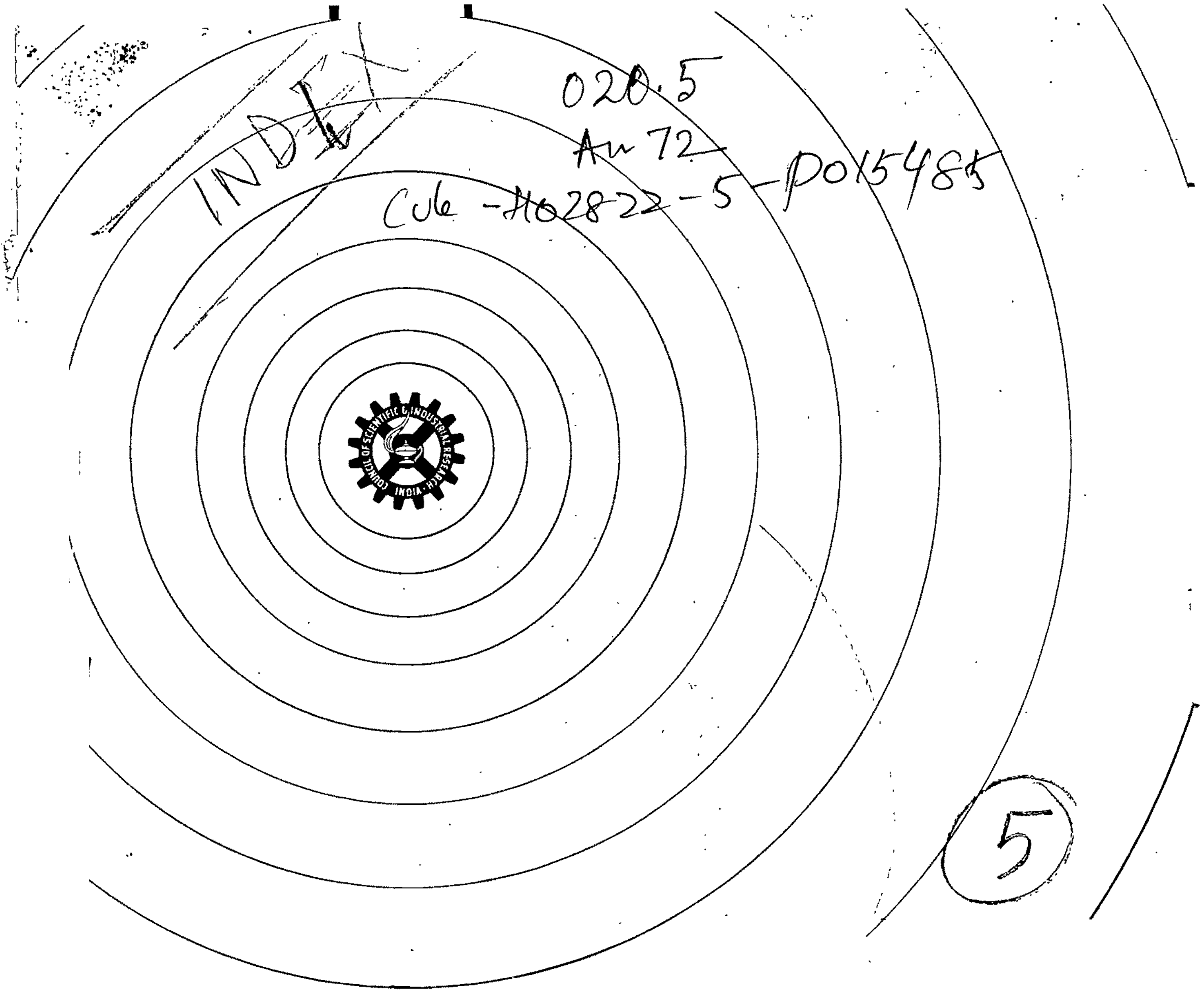

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Dr. Kjeld Klintøe is the Director of Dansk Teknisk Oplysningstjeneste (The Danish Technical Information Service). Since the inception of this Service, in 1956, the responsibilities of Dr. Klintøe, a qualified engineer himself, have been the creation of a close contact between Danish industry and technical research through a novel concept of 'active documentation'. The fundamental idea behind the working policy of DTO is that new knowledge obtained by means of research is not of proper value to the community until it has been converted into measurable results in production. The industry is conceived as the consumer of new knowledge and the DTO has taken upon itself the responsibility of marketing of this new knowledge.

During his brief stop-over at Delhi, on his way back from the FID Conference at Tokyo, Dr. Klintøe gave an illustrated talk on the activities of the DTO on 19th October 1967, at the CSIR auditorium, before a gathering of scientists and documentalists. We are pleased to publish in the following pages a report on this talk with the gracious permission of Dr. Klintøe.

THE STORY OF DTO (DANSK TEKNISK OPLYSNINGSTJENESTE): DANISH TECHNICAL INFORMATION SERVICE

UNIVERSITY OF CALCUTTA
CENTRAL LIBRARY

Kjeld Klintøe
Director, DTO, Copenhagen

To get a clear picture of the working of the DTO, it is necessary to have an idea of the country itself. Denmark is a small country covering an area of 43,000 sq. km (16,000 sq. miles) with a population of 4.7 million. In any country with this small size of population, changing the country's economy from agricultural to industrial base means, essentially, creation of new demands for new products and services. From the point of view of an industry, in a free and competitive economy, this means satisfying demands for goods and services making profit all the time. This, we believe, can be ensured only by the application of science or new knowledge to industry.

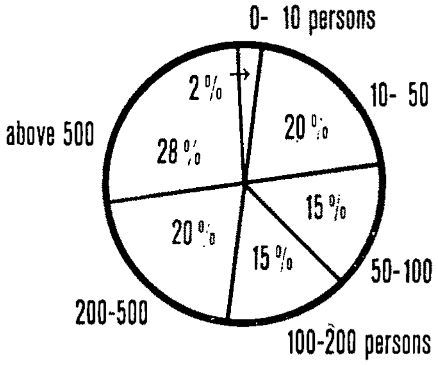
Structure of the Danish Industry

Before we develop this concept in detail let us have a bird's eye view of the Danish industry. In 1964 the number of persons employed in industries was about 4,09,000. A large number of them were employed in small scale industries. The following figures indicate the distribution of employed persons according to scale of industries:

NUMBER OF MANUFACTURING ENTERPRISES EMPLOYING EACH

1.	More than 10 persons	5500
2.	More than 100 persons	800
3.	More than 500 persons	100

The percentage of total manpower employed according to the size of the enterprises is shown in the following diagram:



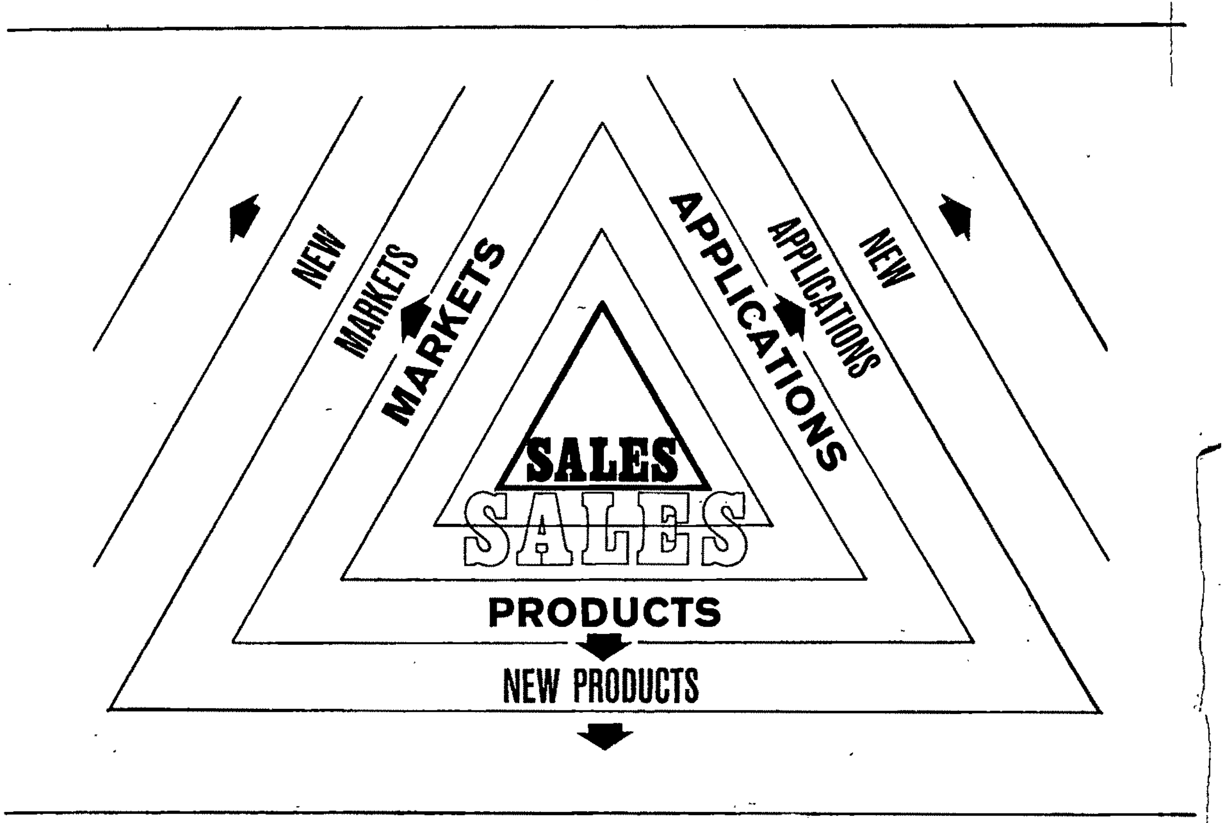
Since 1957 the rate of economic growth in Denmark has been very sharp. The industrial development has resulted in a 78 per cent increase in the contribution of the manufacturing industry to the gross national product during the period 1957 to 1963 and together with building, construction, etc., accounts for some 40 per cent of the total gross national product.

In 1913 the share of manufacturing industry in the Danish export trade was only about 12 per cent but in 1966 it rose to over 52 per cent.

Technical Knowledge and Competitive Power

In all countries industry is beginning to realize that it must advance on its positions, it must find new ways, it must move forward. The old notion of producing something first and then sell the products one had is gone. In its place has now come the new belief that it is the buying power which must be captured, it is the buying power which determines production. In other words, it is the sales possibilities which determine what shall be produced. Hence, a firm's competitive position (capacity for survival) is directly determined by how well it is informed of what buying power demands, and whether it knows how to produce the goods wanted by the buying power, i.e., the market.

To put it emphatically, it can be said that a firm's competitive position is determined by its fund of knowledge and its ability to convert knowledge into salable goods. Only those firms which are steadily developing and pursue a policy of expansion or sales promotion through effective application of technical knowledge will have a chance to survive. This is shown in the form of expanding triangles in the following diagram.



GROWTH OF SALES VOLUME

Now let us see how the Danish industry is equipped to gather knowledge and convert that knowledge into saleable goods. This will depend on the suitable staff capacity of the individual firms. The following figures will give some idea on this point:

DISTRIBUTION OF ENGINEERS
AMONG INDUSTRIAL ENTERPRISES

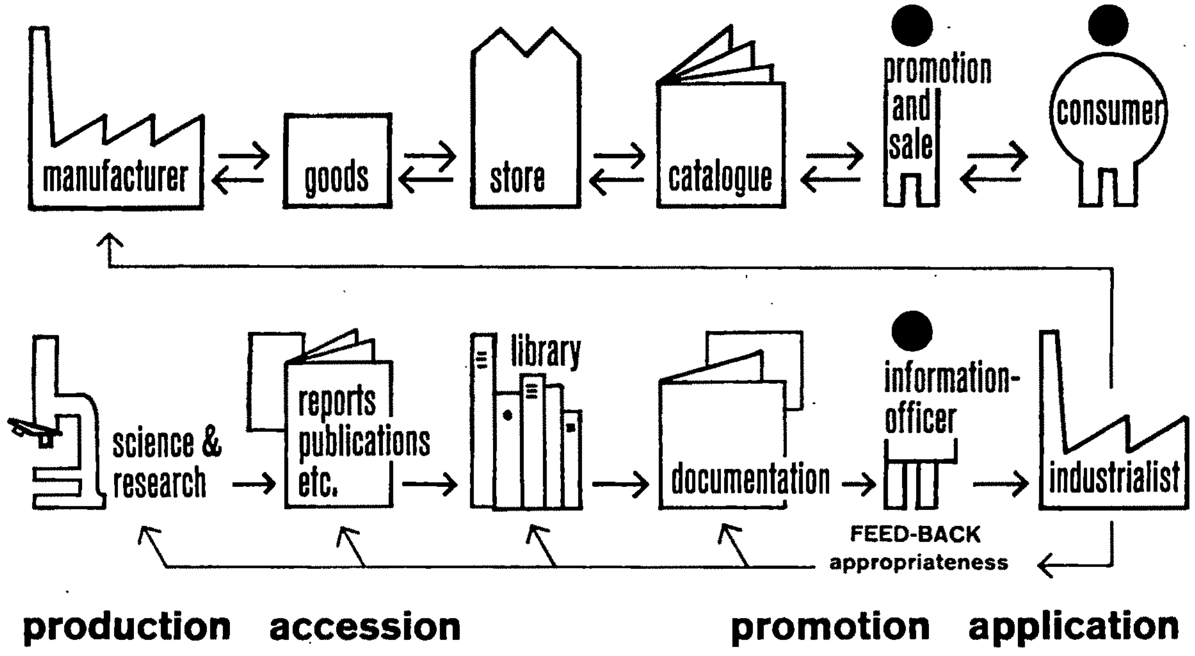
Number of Enterprises		Employing more than
Metropolitan area	Provincial area	
1450	1705	1 engineer
290	240	3 engineers
90	70	10 engineers
25	25	20 engineers
15	5	50 engineers

It would be evident from the above figures that only a few firms have the necessary staff capacity to utilize knowledge effectively. Most of the firms are short of this capacity because of limitation in number of qualified staff, although many of them are aware of their demand for knowledge and are capable of applying knowledge.

The DTO's Role

With this picture of the young and developing Danish industry, its structure, its progress, and a scarcity in the number of scientifically trained personnel, it can now be said that DTO had to formulate a programme of mobilization of resources of knowledge available within the country. The idea behind the working policy of DTO is that knowledge obtained by means of research is not of proper value to the community until it has been converted into measurable results in production. DTO has taken upon itself the task of selling knowledge as a commodity. Our view of knowledge as a commodity to be utilised by industry is shown in the following flow diagram:

KNOWLEDGE is a COMMODITY



Once it is realised that knowledge is a commodity, with researchers as producers and industry as consumers, it becomes clear that in the marketing of knowledge or 'Information Service', if it is called so, the following factors have to be kept in mind:

INFORMATION - SERVICE

1. Examination of the structure of the prospective market.
2. The diversification of demand.
3. Development and stimulation of demand.
4. Active presentation of assortments of "commodities".
5. Training in searching for and utilization of "commodities" available.
6. Liaison-service between "consumers" and "stores" and "manufacturers".

DTO's working programme is essentially based on the above concept of information service.

Status of DTO

DTO was established on April 1, 1956, as a private, independent institution within the framework of the Danish Academy for Technical Sciences (ATV). In 1960, the Danish Council for Scientific and Industrial Research was established and the DTO was affiliated to the DCSIR. DTO is subsidized by the government but has its own governing body responsible for the policy and working programme.

Working Programme of DTO

The DTO revises and makes adjustments in its working programme to keep itself dynamic and its activities suited to the demands of industry and research.

During the early years, emphasis was given to active dissemination of selected publications and cuttings from technical journals and reference-journals, a promotion service, more or less on the traditional lines of information service, drawing attention to the numerous sources of experiences and knowledge.

Since 1958, a notable shift in emphasis has been DTO's Liaison service between industry and research which has proved to be much more effective in the transmission of knowledge and results of research. More and more emphasis is given to activities in which the verbal communication can prepare the ground for receptivity to other forms of transmitting information, knowledge and results of research to industry.

To fulfil all the objectives mentioned so far the working programme of DTO at present includes the following methods:

DANISH TECHNICAL INFORMATION SERVICE

1. Field liaison service.
2. Active information and loan service.
3. Conference-, course- and training service.
4. Question and answer service.
5. Advisory service on setting up of industrial information service.
6. Specialized information service.

1. Field liaison service —, Visiting firms uninvited, stimulating demand for knowledge by interviewing, promoting sources of specialised knowledge available. We believe, it is necessary to pay visits to get results. To elaborate it a little more, it means DTO's technical staff takes the initiative to call on industrial companies, institutions and laboratories of research and discusses with managers supervisers and technical staff members the demands, actual and long term, for assistance in the solution of problems and provision of special information related to programme of development and research. We even assist institutions and laboratories of research through arrangement of exhibitions and promotion of their services.

As a result of such activities DTO is able to get as feed-back, the profile of fields of interests and receptivity of different industrial units and appropriateness of sources and services available.

2. Active information and loan service — searching information and evaluation according to "profile" of individual firms, and dissemi-

nating them uninvited. Having surveyed the market for information by personal visits and contacts, as mentioned above, DTO is in a position to know who are the customers, what are their frames of interests and in which environments do they work. This forms the basis of an active selective information service. DTO selects from current periodicals information on technical, commercial, economic and organizational development which it is presumed should be of interest to the prospective customers known to us. Each selected piece of information is addressed personally, usually in the form of cutting from periodicals, to an individual ranking at the top of the organization of a selected institution, with an offer to provide the receiver with more comprehensive information, if demanded, on customer's account. This method usually results in requests for more information, documentation and service.

3. Conference —, course- and training service. This method aims to a) stimulate the efficient utilization of knowledge within a branch of industry or a geographical area, b) stimulate the cross-flow of information on an important topic, c) promote specialized information services, d) train how to organize information flow to and within the an enterprise. DTO does this by arranging courses and information-days about technical information, for managers and technical staff. DTO also takes the initiative in arranging for conferences where managers and technical sales directors of industrial companies can discuss problems on development, possibly make propositions for establishment or development of auxiliary institutions for industry.

4. Question and answer service. This service means a) transmitting requests for knowledge, documentation, advisory-service etc., to appropriate source of information, establishing personal contact, b) confidential intelligence service upon request, and c) international referral service. It should be noted that these services are charged and DTO works confidentially for the customer.

5. Advisory service on setting up of industrial information service.

6. Specialized information service. DTO pays special attention to the liaison between industry and research within certain sectors of industry.

Scope of Activities

Industrial production of any kind, including activities within industrial companies for marketing, economy and management, comes under DTO's scope. Thus industrial processing of products originating from fishing, agriculture, forestry and horticulture as well as production of building materials are included, whereas information service for fishing, agriculture, forestry, horticulture, building and trade is not undertaken by DTO.

Nature of DTO's Service

It must be kept in mind that what DTO is doing is information service in the sense of marketing specialist in the field of knowledge. Traditional library and documentation services are beyond DTO's scope of activities. Although, it would be evident from what has been said before, that DTO's activities promote the demand for such services. As has been said, the usual response to DTO's disseminated more information. This may be available from stores like documentation centres and libraries or manufacturers like research laboratories where new knowledge is produced and existing knowledge improved. This is exactly what is meant by the statement, made earlier,, liaison service between 'consumers' and 'stores' and 'manufacturers'.

Types of Material Procured by DTO

Although DTO lays great emphasis, in its liaison activities, on information sources other than printed material yet it procures material which are necessary for its, a) intelligence service to industry and research, b) active, though limited, lending service, and c) active, selective information service. These are usually, annual reports of research institutions, directories, special technical reports, subject bibliographies commercial and economic reports and other publications not commonly distributed by booksellers or libraries. DTO also subscribes to less known periodicals of broad contents, i.e. periodicals which very few firms and institutions have the capacity for searching themselves systematically. Relevant information is cut out from such journals and disseminated to selected firms or institutions. It may be noted that DTO does not keep a copy of the journal, but is prepared to assist the client in obtaining the abstracted book, report or paper.

Volume of Work

Here are some figures on the turnover of work handled by us during 1967.

DTO Statistics 1967

1.	Selected active information	5,300
2.	Requests for documents	825
3.	Active document loan service	3,400
4.	Field liaison service	520
5.	Requests for confidential intelligence service	205
6.	Conferences and courses	12
7.	Participants	420

Staff and Budget

This picture of DTO's activities would not be complete without an idea as to the number of persons employed and an estimate of expenditure involved in the work. DTO has a staff of only 26 persons, and the functional breakdown is a follows:

12 Engineers, M.Sc.
1 Economist, M. Econ.
13 Typists and office workers.

The budget of the DTO during the same year was as follows:

DTO Budget

Salaries:	1,324,000 d. Kr.
Travel expenses:	56,000 d. Kr.
Office materials:	305,000 d. Kr.
Rent expenses:	136,000 d. Kr.
Sundries:	27,000 d. Kr.
	1,848,000 d. Kr.
Covered by:	
Own income	172,000 d. Kr.
Support by DCSIR	1,676,000 d. Kr.
	1,848,000 d. Kr.

1 US $ = ca. 7 d.Kr.

A STUDY OF COVER TO COVER ENGLISH TRANSLATIONS OF RUSSIAN SCIENTIFIC AND TECHNICAL JOURNALS

V.K. Rangra
Defence Scientific Information and
Documentation Centre, Delhi

The growing interest in the Russian scientific literature, the low percentage of the language knowing scientists and the high cost of translation of individual papers as contributing factors to the cover to cover translation programmes have been discussed. The peculiarities observed in the title page, collation, frequency, subscription price, table of contents, time lag in publication and the editorial arrangements of the translated journal vis-a-vis the original have been stated. The role of organisations associated with translation programmes i.e. sponsoring agencies, professional translators and publishers, has been described. A classified list of 162 translated journals, subject index to the list and publishers addresses are given in the appendices.

1. Introduction

The significance of Russian contribution to the development of science and technology has been fairly admitted by advanced nations of the world. Russian now occupies the top position in the world output of scientific literature generated in languages other than the English [1]. The popularity of Russian literature is also evident from the large number of references made to the Russian journals in the scientific and technical literature issued from the western countries. It is estimated that one out of every five research reports in the journal Physical Review refers to the Journal of Experimental and Theoretical Physics (JETP), the English translation of the Russian journal Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki[2]. As a result, the demand for translations from Russian literature is on the increase; in Great Britain it is almost equal to the total demand for translations from all other languages [3].

2. Need for Translations

The major English language abstracting and indexing publications cover only a fraction of the total Russian scientific and technical literature. This is evident from the percentage of Russian literature indexed by these services, details of which are given below [4].

Chemical Abstracts	23.4
Biological Abstracts	10.0
Physics Abstracts	17.0
Engineering Index	3.9
Index Medicus	5.6
Mathematical Reviews	21.4

Consequently a good deal of Russian contributions remains obscure to the English speaking countries. Inspite of great interest evinced in the study of Russian literature, the Russian knowing scientists in advanced countries like the Great Britain [4] and the United States [5] number only 10% and 6% respectively. In order to check the inadvertent omission of important references which may result in the selective translation of individual papers, cover to cover translation of important Russian journals is the only accepted remedy.

3. Translation

Translation programmes are highly expensive. The average cost of making a translation works out to be £ 7.47 [6]. With a view to bring the translated journals within the reach of individual scientists and research organisations, most of the translation programmes are financed by the national bodies.

4. Development Stage

The first translated journal which is still in existence is the Journal of General Chemistry being brought by the Consultants Bureau since 1949. Although interest in the study of Russian literature was stimulated much earlier, it was only in 1955 that the translation programme gained momentum when the First International Conference on Peaceful Uses of Atomic Energy was attended by Russian scientists who contributed about 100 papers.

5. Current Output

So far 162 titles of cover to cover English translation of Soviet journals which are being produced from three countries, namely the United States, Great Britain and Canada have been identified. The United States produces about 85% of the total translated journals. Great Britain brings out the rest except one which comes from Canada. Taking into consideration the estimated number of Russian journals which ranges from 2600 (7) to 4000 (8) the present number of translated journals seems to be quite modest.

A classified list of current cover to cover translated journals is given as Appendix A. Entries in the list are arranged under broad subject groups by Universal Decimal Classification and provide information on title of the translated journal; transliterated title of the original journal according to the style followed by the 'World List of Scientific Periodicals', year since translated; frequency; subscription and the publisher. A detailed subject index to the list is given as Appendix B. A list of publishers along with their addresses who are responsible for bringing out the translated journals is given as Appendix C.

The following sources were consulted in the compilation of the list:

- i) National Science Foundations (USA)
- ii) Clearinghouse for Federal Scientific and Technical Information (USA)
- iii) National Lending Library for Science and Technology (U.K.)
- iv) Publishers' catalogues and their occasional announcements about new titles appearing in the current journals.

The subject breakdown of the 162 translated journals is as under:-

Documentation	1
Bibliographies) Catalogues.) Patent Lists)	5
Mathematics.) Statistics)	10
Astronomy. Surveying. Geodesy	6
Physics. Mechanics	27
Chemistry.) Crystallography)	25
Geology. Meteorology	12
Palaeontology	1
Biological Sciences	11
Botany	2
Entomology	1
Medical Sciences	1
Engineering, General Electrical Engineering.) Telecommunication)	12
Workshop Practice	5
Mining	1
Civil Engineering	1
Soil Science/Mechanics	3
Aeronautical Engineering	1
Chemical Technology	9
Metallurgy	9
Textile Industry	1
Rubber. Plastics	4
Instrumentation	5

6. Examination of the Title Page and other Preliminary Matter

6.1 Title

The title of a translated journal is normally the literal English translation of the original Russian journal. Adjuncts such as Russian, Soviet, USSR, Journal are added before or after the title wherever necessary to make it distinct from the English language journals appearing under an identical title. In some cases the title of the translated journal is quite different from the literal translation of the original Russian e.g. 'Automatic Documentation & Mathematical Linguistics' is the translation title of the original Russian journal 'Nauchno-Tekhnicheskaya Informatsiya' which literally means 'Scientific and Technical Information'. The original title in Russian alphabets (in some cases to be followed by the transliterated title) appears on the cover/title page just above or below the translated title.

6.2 Collation

There is no standard pattern in recording volume number and publication date of the translated journal vis-a-vis the original. The following forms have been observed:-

i) Numerical sequence of volume, number and publication date of the translated journal coincides with that of the original Russian. Issue date (or only the year) of the translated journal is also indicated at appropriate place. (Consultants Bureau, Pergamon Press, Faraday Press).

ii) Volume is omitted but number and publication date of the translated journal coincides with that of the original Russian. (American Institute of Physics

6.3 Frequency

Normally frequency of the original Russian journal is followed. In rare cases the frequency of the translated journal is altered e.g. i) Metal Sciences and Heat Treatment of Metals 6 issues instead of 12 issues a year; ii) Combustion, Explosion and Shockwaves 4 issues instead of 12 issues a year.

6.4 Subscription Price

The subscription price of the translated journals issued by learned societies and research institutions which are recipients of grants from national agencies, is about 2 to 3 times that of the original Russian. The translated journals produced by commercial bodies are costlier, their subscription price ranging between 8 to 15 times that of the original. In case of the journal ' Soviet Aeronautics' the price difference is as high as 28 times. The per page subscription cost of subsidised translated journals with adequate circulation (over 2000 copies) comes to about 5 cents [9].

6.5 Table of Contents

Some of the publishers provide a column in the table of contents for indicating the corresponding Russian page from the original along with the English page of the translated journal (American Institute of Physics, Consultants Bureau).

6.6 Time Lag in Publication

The time lag between the publication of the original Russian journal and the translated, varies from publisher to publisher. It ranges between 6 months (American Institute of Physics, Consultants Bureau, Faraday Press) to 12 months (Pergamon Press).

6.7 Editorial Board and Publication Arrangement

Separate editorial boards or translation editors are appointed for the translated journals issued by American Institute of Physics, Pergamon Press and Institute of Electrical and Electronics Engineers. Some of the publishers e.g. Consultants Bureau, Pergamon Press and Institute of Electrical and Electronics Engineers give details of the editorial board of the original Russian journal at title/end cover. Publication arrangement containing details of the translating and sponsoring bodies and sometimes the exhaustive list of office bearers of the issuing organisation is given on the cover page.

7. Organisations Associated with Translation Programmes

7.1 Sponsoring Agencies

As stated earlier the translations programmes are mostly sponsored, financed and subidized by some of the national bodies. In the United States, the National Science Foundation during 1967 allocated about $ 1 million on sponsoring publication of 23 cover to cover and 5 selective translation journals [10]. In Great Britain the Department of Education & Science sponsors publication of 16 translated journals spending about £ 160,000 annually [11].

7.2 Professional Translators

Not all the publishers of the translated journals are actually engaged in the translation and production work. Most of the learned societies and research institutions who are recipient of grants from sponsoring agencies enlist the services of professional translating bodies on commercial basis. For example, Consultants Bureau produces all the journals issued by American Institute of Physics and three by the Acta Metallurgica. Another significant organisation called Scripta Technica which is successor to Royer and Rogers translates 16 journals for publishers like American Geological Union and Institute of Electrical and Electronics Engineers.

7.3 Publishers of Translated Journals

Although 38 organisations are associated with the publication of translated journals but only a few dominate the scene.

7.31 Aided Bodies

Among the aided bodies, the translation programme of American Institute of Physics is of particular significance. Subsidized by the National Science Foundation, the Institute is bringing out 11 journals, many of them are self-sustaining now.

7.32 Private Enterprise

The impetus to translation programme has been given by profit making organisations. Consultants Bureau Inc. being the oldest and the largest, produces 49 journals. Besides publishing journals under its own name, it translates and produces journals for American Institute of Physics, Acta Metallurgica and also for Instrument Society of America. Faraday Press Inc. which has entered the field very recently has on its programme the publication of 32 journals. Pergamon Press and Scientific Information Consultants, London have also their contribution which are 10 and 9 journals respectively.

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The author is grateful to Shri Dhanpat Rai, Group Officer (Documentation) and Shri S. Parthasarathy, Scientist, INSDOC for critical examination and helpful suggestions. He is thankful to Shri B.S. Sharma for going through the transliteration of Russian titles and Shri N.P. Rao, OIC/DESIDOC and the Director, Defence Science Laboratory for their kind interest and permission to publish the paper.

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APPENDIX A

LIST OF CURRENT COVER TO COVER ENGLISH TRANSLATIONS OF RUSSIAN SCIENTIFIC AND TECHNICAL JOURNALS

(Key to abbreviations/symbols given at the end)

Sl. No.	Title of the Translated Journal	Title of the Original Journal	Translated since	Frequency	Subscription	Publisher
1	2	3	4	5	6	7
		002 DOCUMENTATION				
1.	Automatic Documentation &* Mathematical Linguistics	Nauchno-Tekhnicheskaya Informatsiya	1967	q	$145.00	Faraday Press
		01 BIBLIOGRAPHIES. CATALOGUES				
2.	Index to Forthcoming Russian Books, Life Sciences	Noviye Knigi SSSR	1964	bm	$ 24.00	Scientific Information Consultants, London
3.	Index to Forthcoming Russian Books, Technical Sciences	Noviye Knigi SSSR	1964	m	$ 45.00	-do-
4.	Publishing Plan, Academy of Sciences, USSR	Akademiya Nauk SSSR - Tematicheskii Plan	1964	a	$ 13.00	-do-
5.	Medical Publishing Plan, Academy of Medical Sciences, USSR	Akademiya Meditsinskikh Nauk SSSR (Tematicheskii Plan)	1965	a	$ 13.00	-do-
		51 MATHEMATICS & STATISTICS				
6.	Mathematical Notes	Mathematicheskie Zametki	1967	m	$150.00	Consultants Bureau
7.	Russian Mathematical Survey	Uspekhi Matematicheskikh Nauk	1960	bm	$ 32.00	Clever-Hume Press, London
8.	Siberian Mathematical Journal	Sibirskii Matematicheskii Zhurnal	1966	bm	$150.00	Consultants Bureau
9.	Soviet Mathematics - Doklady	Doklady Akademii Nauk SSSR, Matematika	1960	bm	$ 50.00	American Mathematical Society
10.	Transactions of the Moscow Mathematical Society	Trudy Moskovskogo Matematicheskogo Obshchestva	1963	a	$ 5.00 (per vol.)	-do-
11.	Applied Mathematics and Mechanics	Prikladnaya Matematika i Mekhanika	1958	bm	$ 60.00	Pergamon Press
12.	Functional Analysis and its Applications	Funktsional'nyi Analiz	1967	q	$ 75.00	Consultants Bureau

1	2	3	4	5	6	7
13.	Differential Equations	Differentsial'nye Uravneniya	1965	m	$150.00	Faraday Press
14.	USSR Computational Mathematics & Mathematical Physics	Zhurnal Vychislitel'noi Matematiki i Matematicheskoi Fiziki	1961	bm	$140.00	Pergamon Press
15.	Theory of Probability & its Applications	Teoriya Veroyatnostei i ee Primenenie	1956	q	$ 28.50	Society for Industrial & Applied Mathematics, Philadelphia

52 ASTRONOMY. SURVEYING. GEODESY

1	2	3	4	5	6	7
16.	Soviet Astronomy	Astronomicheskii Zhurnal	1957	bm	$ 38.00	American Institute of Physics
17.	Astrophysics	Astrofizika	1965	q	$ 90.00	Faraday Press
18.	Cosmic Research (formerly Artificial Earth Satellites 1958-1963)	Kosmicheskie Issledovaniya (formerly Iskusstvennye Sputniki Zemli)	1963	bm	$ 95.00	Consultants Bureau
19.	Solar System Research	Astronomicheskii Vestnik	1967	q	$ 55.00	Consultants Bureau
20.	Soviet Radiophysics (formerly Izvestiya VUZOV Radiophysics)	Izvestiya Vysshikh Uchebnykh Zavedenii. Radiofizika	1958-1964 1965	bm	*** $125.00	CFSTI Faraday Press
21.	Geodesy and Aerophotography	Izvestiya Vysshikh Uchebnykh Zavedenii. Geodeziya i Aerofotos'yemka	1962	bm	$ 35.00	American Geophysical Union

53 PHYSICS & MECHANICS

1	2	3	4	5	6	7
22.	Bulletin of the Academy of Sciences of the USSR: Physical Series	Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya	1954	m	$245.00	Columbia Technical Translations
23.	Moscow University Physics Bulletin	Vestnik Moskovskogo Gosudarstvennogo Universiteta: Fizika	1966	bm	$110.00	Faraday Press
24.	Moscow University Bulletin, Physics and Astronomy	Vestnik Moskovskogo Universiteta: Fizika, Astronomiya	1965	bm	$ 75.00	Aztec School of Languages, West Acton Mass.
25.	Soviet Physics - Doklady	Doklady Akademii Nauk SSSR, Fizika	1956	m	$ 49.00	American Institute of Physics
26.	Soviet Physics - JETP	Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki	1955	m	$ 99.00	-do-
27.	JETP Letters	Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki Pis'ma v Redaktsiyu	1965	sm	$ 25.00	-do-
28.	Soviet Physics Journal	Investiya Vysshikh Uchebnykh Zavedenii. Fizika	1965	bm	$125.00	Faraday Press

1	2	3	4	5	6	7
29.	Soviet Physics - Uspekhi* (formerly Soviet Advances in Physical Sciences 1957-1958)	Uspekhi Fizicheskikh Nauk	1957-58, 1958(V. 66)	 bm	\$ 6.50 (per vol.) \$ 48.00	CFSTI American Institute of Physics
30.	Journal of Engineering Physics (formerly USSR Engineering Physics Abstracts, 1962-64)	Inzhenerno-Fizicheskii Zhurnal	1965	m	\$150.00	Faraday Press
31.	Soviet Physics - Technical Physics	Zhurnal Tekhnicheskoi Fiziki	1956	m	\$ 74.00	American Institute of Physics
32.	Soviet Abstracts, Mechanics	Referativnyi Zhurnal: Mekhanika	1956	m	-	Technical Information Library Ministry of Aviation, London
33.	Friction & Wear in Machinery	Trenie i Iznos v Mashinakh	1956	-	\$ 7.50 (per copy)	American Society of Mechanical Engineers
34.	Fluid Dynamics	Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkostei i Gasov	1966	bm	\$160.00	Faraday Press
35.	Journal of Applied Mechanics & Technical Physics	Zhurnal Prikladnoi Mekhaniki i Tekhnicheskoi Fiziki	1965	bm	\$150.00	-do-
36.	Soviet Applied Mechanics	Prikladnaya Mekhanika	1966	m	\$160.00	-do-
37.	Soviet Physics - Acoustics	Akusticheskii Zhurnal	1955	q	\$ 22.00	American Institute of Physics
38.	Optics and Spectroscopy	Optika i Spectroskopiya	1959	m	\$ 15.00	Optical Society of America
39.	Soviet Journal of Optical Technology	Optiko-Mekhanicheskaya Promyshlennost'	[1968]	bm	\$ 26.00	-do-
40.	Journal of Applied Spectroscopy	Zhurnal Prikladnoi Spektroskopii	1965	m	\$150.00	Faraday Press
41.	High Temperature	Teplofizika Vysokikh Temperatur	1963	bm	\$ 80.00	Consultants Bureau (Subscription handled by American Institute of Physics)
42.	Combustion Explosion and Shock Waves	Fizika Goreniya i Vzryva	1965	q	\$100.00	Faraday Press
43.	Thermal Engineering	Teploenergetika	1964	m	\$ 75.00	Pergamon Press
44.	Magnetohydrodynamics	Magnitnaya Gidrodinamika	1965	q	\$ 90.00	Faraday Press
45.	Soviet Journal of Nuclear Physics	Yadernaya Fizika	1965	m	\$ 74.00	American Insti- of Physics

1	2	3	4	5	6	7
46.	Soviet Journal of Atomic Energy	Atomnaya Energiya	1956	bm	$ 95.00	Consultants Bureau
47.	Soviet Physics - Solid State	Fizika Tverdogo Tela	1959	m	$ 99.00	American Institute of Physics
48.	Mechanics of Solids	Mekhanika Tverdogo Tela	[1967]	bm	$160.00	Faraday Press
	54	CHEMISTRY				
49.	Bulletin of the Academy of Sciences of the USSR, Division of Chemical Sciences	Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (formerly Izvestiya Akademii Nauk SSSR Otdeleniya Khimicheskikh Nauk 1952-63)	1952	m	$135.00	Consultants Bureau
50.	Doklady - Chemistry	Doklady Akademii Nauk SSSR, Khimiya	1956	bm	$120.00	-do-
51.	Journal of General Chemistry	Zhurnal Obshchei Khimii	1949	m	$135.00	-do-
52.	Mendeleev Chemistry Journal	Zhurnal Vsesoyuznogo Khimichescogo Obshchestva im. D.I. Mendeleeva	1966	bm	$160.00	Faraday Press
53.	Moscow University Chemistry Bulletin	Vestnik Moskovskogo Gosudarstvennogo Universiteta, Seriya Khimiya	1966	bm	$110.00	-do-
54.	Russian Chemical Review	Uspekhi Khimii	1960	m	$ 50.40	Chemical Society, London
55.	Siberian Chemistry Journal	Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR: Seriya Khimicheskaya	1967	bm	$ 80.00	Consultants Bureau
56.	Soviet Progress in Chemistry	Ukrayinskyi Khimichnyi Zhurnal	1965	m	$150.00	Faraday Press
57.	Theoretical & Experimental Chemistry	Teoreticheskaya i Eksperimental'naya Khimiya	1965	bm	$120.00	-do-
58.	Doklady Physical Chemistry	Doklady Akademii Nauk SSSR, Fizicheskaya Khimiya	1957	bm	$160.00	Consultants Bureau
59.	Russian Journal of Physical Chemistry	Zhurnal Fizicheskoi Khimii	1959	m	$126.00	Chemical Society, London
60.	High-Energy Chemistry	Khimiya Vysokikh Energii	1967	bm	$100.00	Consultants Bureau
61.	Kinetics and Catalysis	Kinetika i Kataliz	1960	bm	$150.00	-do-
62.	Soviet Electrochemistry	Elektrokhimiya	1965	m	$125.00	-do-
63.	Colloid Journal	Kolloidnyi Zhurnal	1952	bm	$ 95.00	-do-
64.	Soviet Radiochemistry (formerly Radiochemistry 1960-61)	Radiokhimiya	1960-61, 1962	 bm	*** $ 95.00	CFSTI Consultants Bureau

1	2	3	4	5	6	7
65.	Journal of Structural Chemistry	Zhurnal Strukturnoi Khimii	1960	bm	$ 95.00	-do-
66.	Journal of Analytical Chemistry	Zhurnal Analiticheskoi Khimii	1952	m	$135.00	-do-
67.	Inorganic Materials	Izvestiya Akademii Nauk SSSR: Seriya Neorganicheskoi Materialy	1965	m	$150.00	-do-
68.	Russian Journal of Inorganic Chemistry (formerly Journal of Inorganic Chemistry 1956-58)	Zhurnal Neorganicheskoi Khimii	1956-58, 1959	m	*** $126.00	CFSTI Chemical Society, London
69.	Journal of Organic Chemistry	Zhurnal Organicheskoi Khimii	1965	m	$160.00	Consultants Bureau
70.	Organic Reactivity	Reaktsionnaya Sposobnost' Organicheskikh Soedinenii	1966	q	$ 75.00	-do-
71.	Chemistry of Heterocyclic Compounds	Khimiya Geterotsiklicheskikh Soedinenii	1965	bm	$120.00	Faraday Press
72.	Chemistry of Natural Compounds	Khimiya Prirodnykh Soedinenii	1965	bm	$110.00	-do-
73.	Soviet Physics - Crystallography	Kristallografiya	1957	bm	$ 38.00	American Institute of Physics
		55 GEOLOGY. METEOROLOGY				
74.	Problems of the North	Problemy Severa	1958	irr	$ 7.00 (per issue)	National Research Council, Ottawa
75.	Soviet Antarctic Expedition Information Bulletin	Informatsionnyi Byulleten' Sovetskoi Antarkticheskoi Ekspeditsii	1961 (V. 4)	bm	$ 36.00	American Geophysical Union
76.	Soviet Geology	Sovetskaya Geologiya	1960	-	15 cent per page	American Geological Institute
77.	Doklady Earth Sciences	Doklady Akademii Nauk SSSR: Geokhimiya, Geologiya...	1959	bm	$ 45.00	-do-
78.	Izvestiya, Physics of the Solid Earth	Izvestiya Akademii Nauk SSSR: Seriya Fiziki Zemli	1965	m	$ 60.00	American Geophysical Union
79.	Geomagnetism and Aeronomy	Geomagnetizm i Aeronomiya	1961	bm	$ 45.00	-do-
80.	Oceanology (formerly Soviet Oceanography 1959-64)	Okeanologiya	1965	bm	$ 45.00	-do-
81.	Bulletin of the Academy of Sciences of the USSR, Atmospheric & Oceanic Physics Series	Izvestiya Akademii Nauk SSSR: Seriya Fiziki Atmosfery i Okeana	1965	m	$ 60.00	-do-

1	2	3	4	5	6	7
82.	Works of the Central Aerological Observatory of the USSR	Trudy Tsentral'noi Aerologicheskoi Observatorii	1958	irr	£ 3-3-0 (per issue)	Royal Meteorological Society, London
83.	Lithology and Mineral Resources	Litologiya i Poleznye Iskopaemye	1966	bm	$125.00	Consultants Bureau
84.	Meteoritica	Meteoritika	1963	irr	$ 15.00 (per copy)	Spectrum Translation & Research Inc., New York
85.	Petroleum Geology	Geologiya Nefti i Gaza	1953	m	$ 20.00	Petroleum Geology, McLean, Virginia
	56	PALAEONTOLOGY				
86.	Palaeontology Journal	Palaeontologicheskii Zhurnal	** 1962-66, 1967	-	15 cent (per page)	American Geological Institute
	57	BIOLOGICAL SCIENCES				
87.	Doklaey Biological Sciences (except Biochemistry, Biophysics & Botany, from 1964)	Doklady Akademii Nauk SSSR, Biologiya	1957-61, 1962	bm	*** $ 75.00	CFSTI Consultants Bureau
88.	Bulletin of Experimental Biology and Medicine	Byulleten' Eksperimental'noi Biologii i Meditsiny	1956	m	$ 95.00	-do-
89.	Molecular Biology	Molekulyarnaya Biologiya	1967	bm	$ 95.00	-do-
90.	Soviet Genetics	Genetika	1966	m	$150.00	Faraday Press
91.	Radiobiology	Radiobiologiya	1961	bm	***	CFSTI
92.	Microbiology	Mikrobiologiya	1957-61, 1962	bm	*** $ 95.00	CFSTI Consultants Bureau
93.	Biochemistry	Biokhimiya	1956	bm	$ 95.00	-do-
94.	Doklady Biochemistry	Doklady Akademii Nauk SSSR, Biokhimiya	1957 1958-61**** 1962-63		$ 95.00 *** $ 45.00	-do- CFSTI Consultants Bureau
			1964	bm	$ 50.00	-do-
95.	Applied Biochemistry & Microbiology	Prikladnaya Biokhimiya i Mikrobiologiya	1965	bm	$120.00	Faraday Press
96.	Biophysics	Biofizika	1957	bm	$140.00	Pergamon Press
97.	Doklady Biophysics	Doklady Akademi Nauk SSSR, Biofizika	1957-61 **** 1962-63		*** $ 45.00	CFSTI Consultants Bureau
			1964	bm	$ 50.00	-do-
	58	BOTANY				
98.	Doklady Botanical Sciences	Doklady Akademii Nauk SSSR, Botanika	1957-61 **** 1962-63		*** $ 45.00	CFSTI Consultants Bureau
			1964	bm	$ 50.00	-do-

1	2	3	4	5	6	7
99.	Soviet Plant Physiology	Fiziologiya Rastenii	1957-61		***	CFSTI
			1962	bm	$125.00	Consultants Bureau
		595.7 ENTOMOLOGY				
100.	Entomological Review	Entomologicheskoe Obozrenie	1958-61		***	CFSTI
			1962	q	$ 28.50	Scripta Technica, Washington
		6.006.2 INDUSTRIAL LABORATORIES				
101.	Industrial Laboratory	Zavodskaya Laboratoriya	1958	m	$ 45.00	Instrument Society of America
		608.3 PATENTS				
102.	Soviet Inventions Illustrated: Sec. 1-Chemical, Sec. 2-Electrical; Sec. 3-Mechanical & General	Byulleten' Izobretenii i Tovarnykh Znakov	1962	m	$150.00	Derwent Information Service, London
		61 MEDICAL SCIENCES				
103.	Biomedical Engineering	Meditsinskaya Tekhnika	1967	bm	$ 95.00	Consultants Bureau
		62 ENGINEERING & TECHNOLOGY				
104.	Russian Engineering Journal	Vestnik Mashinostroeniya	1959	m	$ 35.00	Production Engineering Research Association, Leicestershire
105.	Soviet Engineering Journal	Inzhenernyi Zhurnal	1965	bm	$150.00	Faraday Press
106.	Soviet Materials Science	Fiziko-Khimicheskaya Mekhanika Materialov	1965	bm	$115.00	-do-
107.	Defectoscopy	Defektoskopiya	1965	bm	$ 80.00	Consultants Bureau
108.	Applied Solar Energy	Geliotekhnika	1965	bm	$110.00	Faraday Press
109.	Automation and Remote Control	Avtomatika i Telemekhanika	1956	m	$ 60.00	Instrument Society of America
110.	Automatic Control	Avtomatika i Vychislitel'naya Tekhnika	[1967]	bm	$145.00	Faraday Press
111.	Soviet Automatic Control	Avtomatika	1968	bm	$107.00	Institute of Electrical & Electronics Engineers, New York
		621.3 ELECTRICAL ENGINEERING. TELECOMMUNICATION				
112.	Electric Technology, USSR	Elektrichestvo	1957	q	$120.00	Pergamon Press
113.	Soviet Electrical Engineering	Elektrotekhnika	1965	m	$160.00	Faraday Press
114.	Applied Electrical Phenomena (formerly Electrical Processing of Materials)	Elektronnaya Obrabotka Materialov	1965	bm	$ 80.00	Consultants Bureau

1	2	3	4	5	6	7
115.	Telecommunications & Radio Engineering	Elektrosvyaz' Radiotekhnika (formerly 'Elektrosvyaz' and 'Radiotekhnika')	1963	m	$107.00	Scripta Technica for Institute of Electrical & Electronics Engineers, New York
116.	Problems of Information Transmission	Problemy Peredachi Informatsii	1965	q	$100.00	Faraday Press
117.	Cybernetics	Kibernetika	1965	bm	$115.00	-do-
118.	Cybernetics Abstracts	Referativnyi Zhurnal, Kibernetika	1965	m	$135.00	Scientific Information Consultants, London
119.	Engineering Cybernetics	Izvestiya Akademii Nauk SSSR: Tekhnicheskaya Kibernetika	1965	bm	$ 87.00	Institute of Electrical & Electronics Engineers, New York
120.	Problems of Cybernetics	Problemy Kibernetiki	1959	-	$ 60.00	Pergamon Press
121.	Soviet Physics - Semiconductors	Fizika i Tekhnika Poluprovodnikov	1967	m	$ 74.00	American Institute of Physics
122.	Radio Engineering and Electronic Physics	Radiotekhnika i Elektronika	1963	m	$107.00	Scripta Technica for Institute of Electrical & Electronics Engineers, New York
123.	Soviet Radio Engineering (formerly Izvestiya VUZOV Radio Engineering)	Izvestiya Vysshikh Uchebnykh Zavedenii. Radiotekhnika	1959-64 1965	 bm	*** $115.00	CFSTI Faraday Press
	621.7/.9 WORKSHOP PRACTICE. MACHINE TOOLS					
124.	Soviet Powder Metallurgy and Metal Ceramics	Poroshkovaya Metallurgiya	1962	bm	$125.00	Consultants Bureau
125.	Welding Production	Svarochnoe Proizvodstvo	1959	m	$ 40.00	British Welding Research Association
126.	Automatic Welding	Avtomaticheskaya Svarka	1959	m	$ 40.00	-do-
127.	Machine Science Abstracts	Mashinovedenie	1965	bm	$ 20.00	Scientific Information Consultants, London
128.	Machines and Tooling	Stanki i Instrument	1959	m	$ 20.00	Production Engineering Research Association, Leicestershire
	622 MINING					
129.	Soviet Mining Science	Fiziko-tekhnicheskie Problemy Razrabotki Poleznykh Iskopaemykh	1965	bm	$ 95.00	Consultants Bureau

1	2	3	4	5	6	7
		624 CIVIL ENGINEERING				
130.	Hydrotechnical Construction	Gidrotekhnicheskoe Stroitel'stvo	1967	m	$ 80.00	American Society of Civil Engineers
		629.13 AERONAUTICAL ENGINEERING				
131.	Soviet Aeronautics (formerly Aviation Engineering for 1963)	Izvestiya Vysshikh Uchebnykh Zavedenii. Aviatsionnaya Tekhnika	1966	q	$125.00	Faraday Press
		631.4 SOIL SCIENCE (including SOIL MECHANICS)				
132.	Soviet Soil Sciences	Pochvovedenie	1958-61	m	***	CFSTI
			1962-63		$ 40.00	Scripta Technica, Washington
			1964		$ 40.00	Soil Sciences Society of America
133.	Geotektonika	Geotektonika	1967	bm		American Geological Union
134.	Soil Mechanics and Foundation Enginering	Osnovaniya Fundamenty i Mekhanika Gruntov	1965	bm	$ 75.00	Consultants Bureau
		66 CHEMICAL INDUSTRY. CHEMICAL TECHNOLOGY				
135.	Theoretical Foundations of Chemical Engineering	Teoreticheskie Osnovy Khimicheskoi Tekhnologii	1967	bm	$ 95.00	-do-
136.	Doklady Chemical Technology	Doklady Akademii Nauk SSSR, Khimicheskaya Tekhnologiya	1956	3 issues per year	$135.00	-do-
137.	Journal of Applied Chemistry	Zhurnal Prikladnoi Khimii	1950	m	$135.00	-do-
138.	Chemistry & Technology of Fuels & Oils	Khimiya i Tekhnologiya Topliva i Masel	1965	m	$125.00	-do-
139.	Coke and Chemistry USSR	Koks i Khimiya	1959	m	$ 28.00	Coal Tar Research Association, Leeds
140.	Chemical & Petroleum Engineering	Khimicheskoe i Neftyanoe Mashinostroenie	1965	m	$125.00	Consultants Bureau
141.	Petroleum Chemistry USSR	Neftekhimiya	1961	q	$140.00	Pergamon Press
142	Glass and Ceramics	Steklo i Keramika	1956	m	$125.00	Consultants Bureau
143.	Refractories	Ogneupory	1960	bm	$ 75.00	Consultants Bureau for Acta Metallurgica
		669 METALLURGY				
144.	Abstracts Journal of Metallurgy: Pt. A- Science of Metals Pt. B- Technology of Metals	Referativnyi Zhurnal, Metallurgiya	1957 1958	bm m	$ 28.00 $ 80.00	Pergamon Press for Acta Metallurgica

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145.	Metals Sciences and Heat Treatment of Metals	Metallovedenie i Termicheskaya Obrabotka Metallov	1959	bm	$ 75.00	Consultants Bureau for Acta Metallurgica
146.	Metallurgist	Metallurg	1957	bm	$ 95.00	-do-
147.	Russian Metallurgy (formerly Russian Metallurgy & Mining 1963-64)	Izvestiya Akademii Nauk SSSR: Metally (formerly Izvestiya Akademii Nauk SSSR: Metallurigya i Gornoe Delo 1963-64)	1965	bm	$ 68.00	Scientific Information Consultants, London
148.	Physics of Metals and Metallography	Fizika Metallov i Metallovedenie	1957	m	$140.00	Pergamon Press for Acta Metallurgica
149.	Protection of Metals	Zashchita Metallov	1965	bm	$ 80.00	Consultants Bureau (also by Scientific Information Consultants, London
150.	Russian Casting Production	Liteinoe Proizvodstvo	1961	m	$ 35.00	British Cast Iron Research Association
151.	Stal (Steel)	Stal'	1959	m	$ 69.00	Iron & Steel Institute, London
152.	Soviet Journal of Non-Ferrous Metals	Tsvetnye Metally	1960	m	$ 95.00	Primary Sources, New York
	677	TEXTILE INDUSTRY				
153.	Technology of the Textile Industry, USSR	Izvestiya Vysshikh Uchebnykh Zavedenii. Tekhnologiya Tekstil'noi Promyshlennosti	1960	bm	$ 21.00	Textile Institute, Manchester
	678	RUBBER & PLASTICS				
154.	Polymer Mechanics	Mekhanika Polimerov	1965	bm	$120.00	Faraday Press
155.	Polymer Science USSR	Vysokomolekulyarnye Soedineniya	1959	m	$140.00	Pergamon Press
156.	Soviet Rubber Technology	Kauchuk i Rezina	1959	m	$ 36.00	Palmerton Publishing Co., New York
157.	Soviet Plastics	Plasticheskie Massy	1960	m	$ 54.00	Rubber & Technical Press, London
	681	PRECISION MECHANISM. INSTRUMENTATION				
158.	Automatic Metering	Avtometriya	1965	bm	$ 80.00	Scientific Information Consultants, London
159.	Autometry	Avtometriya	1966	bm	$ 80.00	Consultants Bureau
160.	Instruments & Experimental Techniques	Pribory i Tekhnika Eksperimenta	1958	bm	$ 40.00	Instrument Society of America

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161.	Instrument Construction	Priborostroenie	1959	m	$ 17.10	Taylor & Francis, London
162.	Measurement Techniques	Izmeritel'naya Tekhnika	1959	bm m	$ 25.00	Instrument Society of America

Key to Abbreviations/Symbols

a	Annual	*	Partial translation
bm	Biomonthly	**	The whole Russian journal is being translated but only selected papers are published
CFSTI	Clearinghouse for Federal Scientific and Technical Information, Springfield, (USA)	***	Single issues individually priced
		****	Issues included in the Doklady Biological Sciences, 1962-63.
irr	Irregular	-	Information not available
m	Monthly	[ ]	Probable date
q	Quarterly		
sm	Semimonthly		

APPENDIX B

SUBJECT INDEX

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APPENDIX C

PUBLISHERS OF COVER TO COVER ENGLISH TRANSLATIONS OF RUSSIAN SCIENTIFIC AND TECHNICAL JOURNALS

1. Acta Metallurgica,
   122 East 55th Street,
   New York, 22, N.Y.

2. American Geological Institute,
   1444 N Street, N.W.,
   Washington, D.C. 20005.

3. American Geophysical Union,
   Suit 506, 1145 19th Street, N.W.,
   Washington, D.C. 20036.

4. American Institute of Physics,
   335 East 45th Street,
   New York, N.Y. 10017.

5. American Mathematical Society,
   P.O. Box 6248, Providence,
   Rhode Island 02904.

6. American Society of Civil Engineers,
   345 East Forty-Seventh Street,
   New York, N.Y. 10017.

7. American Society of Mechanical Engineers,
   345 East 47th Street,
   New York, N.Y. 10017.

8. Aztec School of Languages, Inc.,
   P.O. Box 323,
   West Acton, Massachusetts 01780.

9. British Cast Iron Research Association,
   Bordesley Hall, Alvechurch,
   Birmingham, England.

10. British Welding Research Association,
    Abington Hall, Abington,
    Cambridge, England.

11. Coal Tar Research Association,
    Oxford Road, Gomersal,
    Leeds, England.

12. Chemical Society,
    Burlington House,
    Piccadilly, London W.1.

13. Clearinghouse for Federal Scientific & Technical Information,
Port Royal & Braddock Roads,
Springfield, Virginia 22151, U.S.A.

14. Clever-Hume Press Ltd.,
10-15 St. Martin's Street,
London W.C.2.

15. Columbia Technical Translations,
5 Vermont Avenue, White Plains,
New York 10606.

16. Consultants Bureau Enterprises Inc.,
227 West 17th Street,
New York, N.Y. 10011.

17. Derwent Information Service,
Rochdale House, Theobalds Road,
London W.C.1.

18. Faraday Press, Inc.,
84 Fifth Avenue,
New York, N.Y. 10011.

19. Institute of Electrical & Electronics Engineers,
275 Madison Avenue,
New York, N.Y. 10016.

20. Instrument Society of America,
530 William Penn Place,
Pittsburgh, Pennsylvania 15219.

21. Iron & Steel Institute,
4 Grosvenor Gardens,
London S.W.1.

22. National Research Council,
Sussex Drive,
Ottawa 2, Canada.

23. Optical Society of America,
Care American Institute of Physics,
335 East 45th Street,
New York, N.Y. 10017.

24. Palmerton Publishing Corporation Inc.,
101 West 31st Street,
New York, N.Y. 10001.

25. Pergamon Press, Inc.,
44-01 21st Street,
Long Island City, New York.

26. Petroleum Geology,
Box 171, McLean,
Virginia, U.S.A.

27. Primary Sources,
11 Bleecker Street,
New York, N.Y. 10012.

28. Production Engineering Research Association,
Melton Mowbray,
Leicestershire, England.

29. Royal Meteorological Society,
49 Cromwell Road,
London, S.W.7.

30. Rubber & Technical Press Ltd.,
25 Lloyd Baker Street,
London, W.C.1.

31. Scientific Information Consultants, Ltd.,
661 Finchley Road,
London, N.W.2.

32. Scripta Technica, Inc.,
1000 Vermont Avenue, N.W.,
Washington, D.C. 20005.

33. Society for Industrial & Applied Mathematics,
Box 7541, Philadelphia,
Pennsylvania.

34. Soil Science Society of America,
667 South Segoe Road, Madison,
Wisconsin 53711, U.S.A.

35. Spectrum Translations & Research Inc.,
207 East 37th Street,
New York, N.Y. 10016.

36. Taylor & Francis, Ltd.,
Red Lion Court, Fleet Street,
London, E.C.4.

37. Technical Information Library,
Ministry of Aviation,
First Avenue House, High Holborn,
London, W.C.1.

38. Textile Institute,
10 Blackfriars Street,
Manchester 3, England.

THE ANGLO-AMERICAN CATALOGING RULES WITH EMPHASIS ON RULE 14 (REVISER OR ORIGINAL AUTHOR)

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The principles behind rule 14 of the Anglo-American Cataloging Rules, 1967, relating to the choice of heading for Revisions, are discussed in the light of contemporary thinking on this subject. Treatment of such works in the Classified Catalogue Code is also discussed.

Introduction

It is accepted in all quarters, in whatever way one may put it, that the catalogue should be an efficient instrument for ascertaining, whether the library contains a particular book specified by its author and title and, also, which works by a particular author are in the library. The catalogue would discharge these two functions very easily in respect of those books where authorship is known and certain and the same author uses consistently the same form of name in all his works and is also known by that form of name. Even the slightest deviation from this straight path will make it difficult for the catalogue to provide prompt access. Thus, if an author changes his name or uses his real name and also one or more pseudonyms, which name is to be accepted for the catalogue? If it is decided to give emphasis on the first function, i.e. to disclose promptly whether the library contains a particular book specified by its author and title, then it would be expedient to use in the catalogue all the names and their variations used by the same author in his different books. But in doing so such a catalogue becomes a poor instrument for showing which works by a particular author are in the library? Again, if the same author has written in association with two, three, or many other authors, then how the catalogue is to show 'which works by a particular author are in the library'? Well, in this way we can think of varieties of deviations from the straight path of simple books of simple authorship.

Revisions

An interesting deviation from this straight path is the case of 'Revisions'. Under this category we include works, which, due to their nature of contents, are revised and brought up to date from time to time and enjoy a fairly long life. If the author himself is the reviser, then there is no cataloguing problem, but, if the revison is done by a person other than the original author, there creeps in some problems. There may be a succession of such revisers for the same work and the revisions may appear after the original author's death. It means that so far as the revised versions are concerned the intellectual responsibility of the original author decreases with every revision. These are some of the quite well-known features of the category of works we are dealing with here. Without going further into these details and to pose the cataloguer's problem squarely, it would be enough to ask, 'who is the author of such a work'? Generally speaking, the original author and also the subsequent reviser or revisers are responsible for the intellectual content of such a work. But can we say that they are joint authors, or, authorship is shared, according the terminology of the revised code? We deliberately pose the issue in the above manner because of a similar pronouncement on the subject by Dr Hellmut Braun. Dr Braun gave us the concept of 'chronologically linked multiple authorship', meaning thereby the various authors who are concerned in the creation of a work and follow one another chronologically. Dr Braun suggested to treat the first author (or the original author), as a rule, as the 'principal author', and we know, once the principal author has been found the choice of the main entry heading is determined and it is of no importance as to how many other authors have taken part in the creation of a work. But this is only one way of looking at it. The problem cannot be so easily solved and it is evident from the very next clause in Dr Braun's prescription. It reads, "In all these cases the wording of the title-page is the most important factor"[1]. Thus we are brought back to the realities of the problem again, but we can sense easily a guiding principle that dependence on the title-page can be a basis for resolving problems in conflicts of authorship.

Search for Guiding Principle

Now, let us consider the other guiding principles also, in the matter, which cataloguers and code makers have considered. Cutter prescribed in his Rule 18, "A revision should be entered under the name of the original author unless it becomes substantially a new work". The Joint-Code also maintained the same stand in its Rule 19, which reads, "Enter a revision under the name of the original author unless it has become substantially a new work, in which case it is to be entered under the reviser, with a reference or an added entry under the original author". Then comes the post-war code revision but we find the ALA Code (2nd edn, 1949) towing the same line again. Rule 20 prescribed, "Enter a revision under the name of the original author with added entry for the reviser". With this general rule is added the following instructions, "The rule applies as long as the work remains substantially that of the original author, especially if it purports to be an edition of his work. If, however, the revision is substantially a new work, enter it under the reviser with added entry for the author and title of the original work".

Difficulties in Application

The above rehearsal of rules clearly shows that in the Anglo-American cataloging practice the guiding principle in the choice of the main entry heading for a Revision has been, if we may say so, 'the extent of revision'. Now let us examine whether it can work as a guiding principle. Cutter's ingenuity had sensed the practical difficulty in applying Rule 18, hence he had appended a note to the rule, which is interesting. It reads, "There will be doubt on this point. To determine it, notice whether the revision is counted as one of the editions of the original work, and whether it is described on the title-page as the work of the original author or the reviser and read and weigh the preface. Refer in all doubtful cases" [2]. The above note, we believe, more than helping a cataloguer in his choice of heading, brings out the difficulties in the correct application of the rule. More than that it smacks of indecision and pays a sneaking respect to another principle, i.e. dependence on the title-page or the Canon of Ascertainability. The difficulties in applying ALA Rule 20 has been brought out clearly by Jolley in recent years. He comments, "There are two difficulties in this rule. One is caused by the cataloguer's having to make the critical judgement as to whether a new edition is or is not substantially a new work. The other springs from the fact that accepted practice is not in step with the rule. Some revised editions which are clearly substantially new works are universally referred to by the name of the original author"[3]. The first difficulty mentioned by Jolley is real. The cataloguer has to compare the two editions and then decide whether the revised edition is 'substantially a new work'. One may ask how exactly this is to be measured, is it to be more than half of the work? We consider more important the second difficulty, because there we find ingrained a plausible third guiding principle, i.e, 'usage'. Again, we get a sputtering glimpse of the same principle in one of Dr Ranganathan's comments while discussing precisely the same problem. The comment is, "There is, however, something in usage which may shake a cataloguer from the straight path laid down by the Canon of Ascertainability. [4]

Three Guiding Principles

From what have been said above, it seems three clearly definable guiding principles, to resolve the conflict of authorship in the cataloguing of revisions, emerge. They are:

i) Extent of revision
ii) Usage
iii) The title-page

We have already seen that a succession of codes had selected 'extent of revision' as the guiding principle and we have also seen the difficulties that confronts a cataloguer in the application of a rule based on this principle. Logically speaking choice of heading should be on the basis of the extent of revision. But that is valid only if we take to mean authorship as intellectual responsibility only. Jolley has held that "to the cataloguer the term 'author' implies the concept of both intellectual responsibility and of the name most permanently and consistently associated with a work". If we apply this dual concept of authorship here, surely, the name of the original author has a greater chance of being chosen as the author, as some revised editions which are clearly substantially new works are universally referred to by the name of the original author. But it would be unfair to deny authorship to the reviser on this count alone, as one of the reasons for the association of the original author's name with the work may be that the reviser has not been associated with the work 'long enough to lend his own name to it'. In course of time the reviser's name may be permanently and closely associated with the work. This is precisely what has happened in the case of that immortal work entitled 'Guide to Reference Books', with which the name of Winchell is now associated.

What we have been hinting at is that 'usage' is not a very stable and dependable guide, it may change with the passage of time. Although no code has recommended 'usage' as the guiding principle, in the treatment of revisions in particular, but we have seen that while applying the rule, a cataloguer may be shaken by usage. We have also to remember Cutter's general instructions to cataloguer. He said, "the convenience of the public is always to be set before the ease of the cataloguer... strict consistency in a rule and uniformity in its application sometimes lead to practices which clash with the public's habitual way of looking at things. When these habits are general and deeply rooted, it is unwise for the cataloguer to ignore them, even if they demand a sacrifice of system and simplicity". This is actually a frank acceptance of the importance of usage. So we find cataloguers in a very interesting but unenvious situation. Cutter puts up a notice saying 'always give way to usage' while Dr Ranganathan cautions them saying 'beware of usage'.

Development in the CCC

The fifth edition (1964) of the Classified Catalogue Code has devoted more number of pages to this problem than any other code, if we consider chapters GB and GE together. It may be added that chapter GE has been added only in the fifth edition and the entire contents of this chapter appeared first as an article [5]. As a result, we feel, this chapter hangs loosely, to some extent, in the pattern of things. In chapter GB, a revision is instructed to be treated as a 'dependent work' and is decidedly prescribed to be entered under the name of the original author. In chapter GE, only one type of revisions, viz. revisions where original authors' name have been merged in titles, are treated separately and a different treatment is prescribed for them. Here the stress is on the Canon of Ascertainability, or dependence on the title-page. The concluding sentence of this chapter makes this point clear. It reads: "The safest course to determine the choice of the heading is to rely on the Canon of Ascertainability— that is, by what is indicated in the title-page, rather than sit in judgement over what is given in the title-page".

The reason why we said this chapter hangs loosely in the pattern of things is that the Canon of Ascertainability should be given the same importance in resolving the conflict of authorship in the case of other types of revisions also — where the name of the original author is not merged with the title. Otherwise the work with which Winchell's name is now associated, would always be entered under the name of Kroeger, the original author, if we stricty follow rule GB 5 (the author of the original should be taken as the author of a revision).

Looking from the Point of View of the Main Entry

It would be profitable to look at it from still another angle. As has been analysed very clearly by Eva Verona [6], the main entry can be made to serve either of the following two functions:

(A) Main entries are established and arranged according to the titles of particular publications i.e. different versions; the assembling of literary units (books) is relegated to added entries, or

(B) Main entries are established and arranged according to the original or traditional titles of works and thus assemble all the various editions of one work in one place in the catalogue. The titles of particular publications are represented by added entries.

The CCC can be shown to be generally in favour of method A; this being mainly due to its emphasis on the Canon of Ascertainability which prescribes that the main entry heading has to be taken from information provided by the title-page. Thus rule GB 5 for the entry of revisions is, we feel, a violation of this basic principle and shifts the function of the main entry from method A to method B, mentioned above. We fail to understand why the inclusion or non-inclusion of the name of the original author in the title of a revised edition of a work should necessitate such completely different treatment in the cataloguing of revisions.

The above comments on the CCC practices were made to bring out the point that, at least in one area the CCC has very strongly recommended the third principle, i.e., dependence on the title-page, as the basis for cataloguing of revisions. We now intend to show that contemporary thinking, on this issue, is also along similar lines.

In 1960, Lubetzky suggested a new rule to replace rule 20, in his Draft Code [7]. It reads:"...a revision issued under the name of the reviser should be entered under the name of the reviser"(9b). Again in 1961, Jolley suggested the rewording of the relevant rule of ALA as; "Enter a revision under the original author unless the revision assumes the form of a new work". Jolley also maintains that this is only part of the general axiomatic principle to treat each book as it describes itself unless there is some strong reason to the contrary. So, here we find a clear indication of disatisfaction with the old notion of 'substantially a new work' or the 'extent of revision' principle mentioned earlier.

The New Code

Against this new trend set in by Lubetzky, Jolley and Ranganathan, let us consider the relevant rule in the revised code. Rule 14 lays down —we are quoting verbatim so that it can be easily compared with rule 20 of the ALA code, quoted earlier:

> 14A. In general, enter an edition that has been revised, enlarged, abridged, condensed, etc., by another person, under the original author, with an added entry under the other person.
>
> 14B. If the new edition clearly indicates that the work is no longer that of the original author, however, enter it under the new author. Make an author-title added entry under, or an explanatory reference from, the heading for the earlier work.

First of all, rule 20 (Revisions) was a part of the chapter styled as 'works related to previous publications' in the ALA code. In the new code the relevant rule, i.e. rule 14 (Reviser or original author) finds a place in the chapter on 'works with authorship of mixed character'. This itself is a clear indication of the new emphasis in the new code on types of authorship rather than types of work. Incidentally, it may be mentioned that the CCC also considers the same problem in a similar setting by placing it under a chapter, styled 'Conflict of Authorship: Person vs person'.

Secondly, it is evident that in the wording of the new rule the time-honoured 'substantially a new work' criterion has been dropped, instead a new criterion has been added, viz. when 'the new edition clearly indicates that the work is no longer that of the original author'. It can be reasonably asked how this is indicated or where to look for this indication? In this respect the 'introductory note' given at the beginning of the chapter can provide some guidance to the cataloguer. The note reads as follows:"when different persons or bodies have contributed to the intellectual or artistic content of a work by performing different kinds of functions (e.g. writing, adapting, illustrating, translating, editing, authorizing, etc) the authorship is mixed in character and divided in responsibility. The determination of main entry, or the person or body to be considered primarily responsible, depends variously on such considerations as the relative importance of the different activities as such, the relative proportions of the work that have resulted from these activities, and the emphasis given to each on the title page [emphasis supplied by us]. Thus, by implication, the choice between the original author and the reviser (or new author) for the main entry heading is now to be decided by the emphasis given to each on the title page. We used the phrase 'by implication' deliberately. It has been claimed that the new code has brought us back to the 'realities of the title-page'. In a previous paper [8], it has been shown that in the wording of the rule 3A, this claim is really substantiated. In deciding the principal author this rule has very boldly mentioned 'by wording or typography' in the title page as criteria. Rule 14B also could have been worded in a similar manner, say — 'If the new edition clearly indicates, e.g. by wording or typography, that the work is no longer...'. However, the implication is perhaps the same, when we take into consideration the 'introductory note' quoted earlier.

Thirdly, there is one interesting development to be observed in the wording of the new rule. When the reviser's name is chosen for the main entry heading, he is considered as the 'new author'. This itself has a number of implications. One of which is that the name chosen for the heading bears an 'author-and-his-work' relation to the title in the main entry. We particularly emphasise this point because in a previous paper it has been shown that in the cataloguing of serials, an interesting idea emerged from the comments to Professor Dunkin's questionnaire that the main entry under a corporate body need not imply that the corporate body was the author of the publication. The wording of the present rule shows, on the contrary, that the 'author-and-his work' relation between the heading and the title is too deep-seated a notion to be easily tampered with.

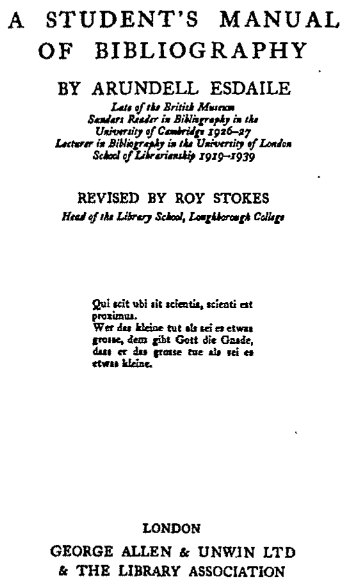
The Canon of Ascertainability is the Best Principle

There is no doubt that from the point of view of the cataloguer this is the most easiest principle to follow. We have seen that to determine the extent of revision is most difficult and to find out the correct usage is also difficult as usuage may vary. Apart from this basic simplicity, we believe, the strong point in favour of the Canon of Ascertainability is that, it takes care of or influences, to a great extent, the other two principles also. If we accept that in our present stage of civilization authorship of a book is considered to possess a special importance, then an author who has 'substantially' revised an earlier work would claim and like to see his own name being associated with the intellectual responsibility of the revised version of the work. But this he cannot just do by himself. The very fact that an earlier work needs a revision means that it has certain 'goodwill' and the publisher would naturally utilise this goodwill to his maximum advantage. Hence the reviser will have to convince the publisher about the extent of revision. The publisher acts, in this respect, as a judge or referee on behalf on the society. The publisher's acceptance of the claim of the reviser and admission of this fact by way of putting the reviser's (or new author's) name in the usual author statement area of the title page, is actually a social acceptance of the reviser's intellectual responsibility. The point we are driving at is that dependence on the title page is, in a way, acceptance of the most logical principal of 'extent of revision' also. One familiar example which is often quoted in discussions on revisions is the immortal work 'Guide to reference books' with which three names are associated — Alice Bertha Kroeger, the original author, Isadore Gilbert Mudge, the first reviser, and Constance M. Winchell, the present reviser. We also know that each one of these three names has been chosen, in succession, as heading for the same work in many catalogues. Surely, this was done on the basis of the 'extent of revision' principle. Our point is that this switch over from the original author's name to the first reviser and then to the second reviser were always made when the title pages of the revisions themselves showed certain changes — indicating, as we have said before, the social acceptance of the intellectual responsibility of the reviser as the 'new author'.

Similarly, it can also be argued that such changes in the title pages of revisions influence 'usuage' also to a very large extent. Taking the same example, mentioned above, we know usage has changed amongst us to associate in succession the names of Kroeger, Mudge, and Winchell for the same work. Winchell's name must have come to be associated with the work only after her name appeared in the author statement area of the title page of the revised edition. A very interesting example of such a change — from the point of view of the title page, extent of revision,and, perhaps usage, is going on before our very eyes, so to say. We mean the latest revised edition of Esdaile's immortal work. For better appreciation of this point we reproduce in the next page the title pages of the last two editions.

Alternative Approaches

The discussion so far centred round only one point, namely conflict of authorship and the consequent difficulties in the choice of heading. There is always another equally important aspect to all such cases where authorship is of a mixed character or there is conflict of authorship, that is how the work is to be retrieved by the catalogue. Application of rule 14 of the new code will surely scatter the different editions of the same work, as



A STUDENT'S MANUAL
OF BIBLIOGRAPHY
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University of Cambridge 1926–27
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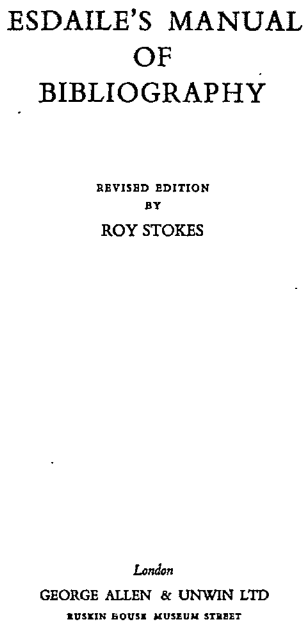
School of Librarianship 1919–1939

REVISED BY ROY STOKES
Head of the Library School, Loughborough College

Qui scit ubi sit scientia, scienti est
proximus.
Wer das kleine tut als sei es etwas
grosse, dem gibt Gott die Gnade,
dass er das grosse tue als sei es
etwas kleine.

LONDON
GEORGE ALLEN & UNWIN LTD
& THE LIBRARY ASSOCIATION

Title Page of the Third Revised Edn, 1963



ESDAILE'S MANUAL
OF
BIBLIOGRAPHY

REVISED EDITION
BY
ROY STOKES

London
GEORGE ALLEN & UNWIN LTD
RUSKIN HOUSE MUSEUM STREET

Title Page of the Fourth Revised Edn, 1967

the rule accepts the pattern of Method A of Eva Verona, mentioned earlier, so far as the nature and function of the main entry is concerned. Hence, assembling of literary units (books), in this case different editions of the same work, has to be done by the added entries. Even the previous edition of the code had specifically recommended preparation of added entries for names not chosen for the main entry. In the revised code there has been some further refinements in this direction also. Rule 14A prescribes an added entry under the reviser, when the main entry is entered under the original author. Rule 14B, on the other hand, prescribes an author-title added entry or an explanatory reference from the heading for the earlier work, when the main entry is entered under the reviser (or new author). This will greatly increase the retrieval efficiency of the catalogue. We emphasise this point because although it is generally accepted that most cataloguers are called upon to maintain and work with existing catalogues rather than create new catalogues, yet our code makers do not seem to have given sufficient thought on this point. A cataloguer will expect from the code, guidance regarding not only how best to catalogue new works but also to relate them where necessary. The author-title added entry prescription of rule 14B is a welcome step in this direction.

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AN EXTENSION TO CYCLIC INDEXING

H. Bose

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Contrary to the conventional practice of cyclic indexing in multiple-entry system, as envisaged in B. S. 1000C: 1963, the paper suggests cyclic indexing in single-entry system with certain modifications and also examines the feasibility of its use as a semi-mechanical indexing process for an UDC classified file.

Introduction

Following the principle of decreasing concreteness of elements in formulating a class number of a subject, more concrete facets of the same subject are cited before the less concrete ones in its facet formula which follows the same classificatory sequence.

The standard facet formula for citation order of elements in a classified subject is laid out as follows [4]:

Whole thing - Kinds - Parts - Materials - Properties - Processes - Operations - Agents.

Threafter the dexriptors (or keywords), representing diverse facets of the subject, are rotated in clockwise pattern to create a set of index entries in a rotated A/Z index.

When the system deals with 3 descriptors, the secondary entry, which is found not in agreement with the 'standard' citation order, is realigned to conform to the same [4]. The system, thus evolved and being an extension to the rotated A/Z index, is known as cyclic index.

But coloned parts of the class number of the subject follow the same pattern of clockwise rotation in both rotated A/Z and cyclic index.

In cyclic index, all index entries are made to be consistent with 'standard' citation order and so the rotated A/Z index differs from the former in having index entries which are generally not in conformity with standard citation order. Also the number of descriptors that it can handle is not limited.

Single-Entry System

So far as chain indexing is concerned, the whole class number in single-entry system, representing the integral subject, is indexed. But complex subjects generally get long class numbers, specially when the UDC scheme is used. Indexing of such subject leads to scattering of their parts. Multiple-entry system is adopted to minimise the scatter by indexing component class numbers (which are separated from one another by colon) separately. This reduces the subject scatter and lessens the load on alphabetical index. But, since the class number get multiple entries under each of its components in the classified file, the economy, brought about by multiple-entry system, is substantially nullified because the classified file swells up disproportionately in the long run.

Moreover, the multiple-entry system is economical with chain indexing when it is applied to a specialised file comprising of analogous subjects; but the case will be different when the conditions are reversed. The reduction of the number in A/Z index depends on the factor that when some class number components, which are common to those of integral class numbers of other analogous subjects in the classified file, are not indexed again. A subject, however complex, is expressed by a helpful arrangement of concepts underlying it. In chain index, an isolated concept in a chain will lead to the class number of the subject and then to the document itself, e. g., Index entry -> component class number → whole class number of the document → document itself.

In cyclic index, an association of concepts in an index entry represents the subject and no concept can be isolated to denote it. All component terms, representing diverse aspects or facets of a subject, are placed together within an index entry wherein their positions vary according to a prefixed pattern. Also no component class number can be taken out of the integral class number here for indexing it separately. Since no chain indexing of a part or whole of the class number of any subject is involved, there is need to maintain a multiple-entry system only for the purpose of isolating component class numbers out of the whole class number for chain indexing them by turn.

According to J. Mills: If we assume that on the average each distinct UDC number has several document entries under it in the classified index, this means that single-entry in the classified file plus rotated A/Z index would still be more economical in size of total index [5].

This is also valid for cyclic index because it is apparent from foregoing discussions that cyclic index is a variation of rotated A/Z index.

Also in single-entry system, some concepts can sometimes be denoted by special auxiliaries in place of colon. This introduces a further element of economy in the form of contracted UDC numbers.

Loading of Descriptors

A simple orientation of descriptors may sometimes not be adequate to elaborate the idea of a complex subject and it will be necessary to make relationships between these terms (descriptors) explicit.

In co-ordinate index, which operates on almost the same principles as faceted classification, links, roles and weights are used to solve syntactical problems. Weights are, however, relatively new device which were proposed as replacements for roles. It needs mental efforts to analyse a subject and loads uniterms with these symbols both at the input and IR (information retrieval stage) stage; but it is essential for operation of the process.

In a non-inflected language like English, prepositions can be used for loading of descriptors to denote their inter-relationships. No such problem would, however, have arisen in case of a heavily inflected language like Russian language. The prepositions can be underlined to differentiate them from descriptors, otherwise anomalies may arise in certain cases, for example:

'invertebrates' and 'in vertebrates'

An example of descriptors, loaded with prepositions, in a cyclic index will demonstrate the form of its entries. Example:

Safety device for package reactor in nuclear power stations.

UDC no. 621.311.2:621.039:621.039.577
-182.3:621.039.587

Citation order:

Nuclear power stations: package reactor: safety device.

Index entries:

in Nuclear power stations: for package reactor: safety device UDC no.

for package reactor: in Nuclear power stations: safety device UDC no.

Safety device: in Nuclear power stations: for package reactor UDC no.

Extended Form

The almost mechanical nature of the formation of index entries, based on the helpful alignment of descriptors conforming to the standard citation order (1:2:3, 2:1:3, 3:1:2) is an advantage over rotated A/Z index. Earlier a suggestion had been made for having a fourth index entry (3:2:1) to make the A/Z index comprehensive [3].

In all these index entries, the primary and secondary facet are so closely knitted that they cannot be separated by the tertiary facet. The realignment of descriptors in the secondary index entry is based on this principle which can further be used for extension of the cyclic indexing for manipulating four descriptors.

The helpful sequence of descriptors in such index entries will be as follows:

(i) 1:2:3:4
(ii) 2:1:3:4
(iii) 3:1:2:4
(iv) 4:3:2:1

where 1, 2, 3, 4 represent the order of alignment of descriptors in the standard citation order of facets of a subject at the pre-coordination stage. The pattern of these index entries, being only an extension of the system with three descriptors, is ordered by the guideline which stipulates that (i) 1 and 2 should not be separated from one another, and (ii) 1, 2, 3 should remain together as a closely woven concept in all index entries.

Accordingly, those index entries wherein 1, 2, 3 is separated by 4 are rejected.

The facet 4, being the least concrete among them, is naturally placed at the end of the each of first three index entries while the fourth one represents the primary index at full length chain when the same class number undergoes chain indexing in single-entry system.

The other alternative would have been to permutate all these descriptors. This would generate 14 or 24 index entries, a majority of which would, however, be redundant. Moreover, such an enormous output of index entires can only be handled conveniently by a machine. As such, only a selection of index entries can be made for a manually operated indexing system taking care that it should not be arbitrary and index entries, thus generated, should be logical and conform to the 'standard' citation order.

The useful feature of these index entries lies in the fact that they, being consistent with standard citation order, are helpful and logical. Distributed relatives at the post-coordination stage present no problem because each of them will become an entryword to index entries by turn.

Role of Classification

The use of a classification scheme along with indexing systems has a definite advantage. The seepage is minimised due to index entries being delimited by class numbers. When UDC schedule is used, multiple facets of a subject is represented by elements of its UDC number and so terms (descriptors) to denote the subject can be selected from the same schedule. These descriptors, being contained in the enumerated UDC schedule, can be considered as standard or authorised terms and ambiguities, generally resulting from the use of natural language, can thus be avoided to a considerable extent. Terms can, however, also be selected from the title on text to replace the absolete ones when the needed terms are not available in the schedule. The reasons are not far to seek. The UDC schedule contains certain undeveloped subjects i.e. plasma physics, solid state physics, guided missiles, astronautics etc. The assignment of co-extensive UDC numbers to many such subjects is not possible at this stage. In chain indexing, classification numbers play an important role and as such they have to be co-extensive for successful operation of the index. But in cyclic index, the role of classification is limited to delimitation of subject fields, linking index entries with classified elements and selection of suitable terms where an enumerated scheme is used.

Mechanization

Marvelled at the astonishing performance of the computer at data processing, its capacity for information processing and retrieval is generally overstimated. The problems confronting these two systems are basically different in nature because the discretion and judgement, which are essential for determination of the sense and syntactic inter-relationships between terms, can best be exercised by a human mind. Consequently, in mechanised indexing, this problem of relationships between terms, involving semantic and syntactic factors, is solved by indirect approach of statistical analysis of word frequencies [6]. Besides, auto-indexing is costly because only a very high-speed computer can acclerate the process of manipulating any form of keyword indexing [1]. So, the prohibitive cost of mechanized indexing makes its use still a remote possibility for an average collection. Moreover, entirely mechanised indexing system (i.e. KWIC, KWOC etc), even after involving human factors, entails a number of disadvantages [2].

The cyclic index, with its prefixed pattern of index entries, is amenable to mechanization. A low-cost equipment like programmatic flexo-writer, fitted with a mechanical device, is ideally suited to this purpose. Characters of index entries can be, through suitable programming, transferred to a tape and this punched tape can be run repeatedly in the same machine to reproduce any number of index entries [5].

Conclusion

Although cyclic indexing, in its present form, can handle only a limited number of descriptors, this does not stand in the way of its adaptation for an average collection unless subjects, as represented therein, are so highly complex as to require more descriptors than what can be provided under this system at present.

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short communication

FREQUENCY SYMBOL FOR PERIODICAL PUBLICATIONS

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The frequency of periodical publications is generally denoted by such descriptive terms as daily, weekly, monthly, quarterly, annual, etc.. In normal practice, this is quite adequate and certainly very convenient. But these days, particularly in the field of scientific publications, we come across many periodicals, whose periodicity is difficult to describe by these descriptive terms. Moreover, some of these descriptive terms are confusing. We expect to receive a biweekly periodical twice a week, whereas we are quite satisfied if we receive a bi-monthly periodical once in two months!

To overcome this lack of precision in denoting the periodicity of a publication, the Unesco had suggested that in the preparation of a national list of periodicals, the frequency should be denoted by a number indicating the number of issues in a year. In the present communication, a mathematical expression is suggested which will not only denote the frequency of the publication accurately, but also give information about the duration of a volume. The frequency of the periodical is indicated by a fraction, the numerator of which denotes number of issues per volume, and the denominator indicates number of months for which a volume runs. The following examples, taken mainly from the Directory of Indian Scientific Periodicals 1968, published by Insdoc, will illustrate the point under discussion. Incidentally it may be mentioned here that frequency symbols have been used in the Directory to denote the periodicity of the publications listed.

Symbol	Meaning		Example
1/24	One issue per volume, One volume in 24 months	(Biennial)	Bulletin of the Allahabad University Mathematical Association.
1/12	One issue per volume, One volume in 12 months	(Annual)	Journal of the University of Bombay
2/12	Two issues per volume, One volume in 12 months	(Half-yearly)	Journal of Science and Engineering Research
1/6	One issue per volume, One volume in 6 months	(Half-yearly)	Index to Indian Medical Periodicals
4/24	Four issues per volume, One volume in 24 months	(Half-yearly)	Indian Journal of Sericulture
3/12	Three issues per volume, One volume in 12 months	(Triannual)	Indian Journal of Genetics and Plant Breeding
4/12	Four issues per volume, One volume in 12 months	(Quarterly)	Proceedings of the National Academy of Sciences, India
6/12	Six issues per volume, One volume in 12 months	(Bi-monthly)	Proceedings of the National Institute of Sciences of India
6/6	Six issues per volume, One volume in 6 months	(Monthly)	Proceedings of the Indian Academy of Sciences

12/12	Twelve issues per volume, One volume in 12 months	(Monthly)	Indian Journal of Pure and Applied Physics
10/12	Ten issues per volume, One volume in 12 months	(?)	Bulletin of the Atomic Scientists, Chicago
13/12	Twelve issues with an annual number per volume, One volume in 12 months	(?)	Radio Transistronic Constructor
24/12	Twenty-four issues per volume, One volume in 12 months	(Semi-monthly)	Current Science
12/6	Twelve issues per volume, One volume in 6 months	(Semi-monthly)	Journal of the Indian Medical Association
26/12	Twenty-six issues per volume, One volume in 12 months	(Fortnightly)	Fibres and Fabrics
26/6	Twenty-six issues per volume, One volume in 6 months	(Weekly)	Chemical Age, London
52/12	Fifty-two issues per volume, One volume in 12 months	(Weekly)	Indian Trade Journal

ALPHABETIC SCATTER OF THE SURNAMES OF CONTEMPORARY INDIAN SCIENTISTS

A.S. Raizada
Meena Khanna
Insdoc, Delhi-12.

Documentation may be considered to be generally concerned with the generation, maintenance and the handling of various types of 'Files'. These files are named according to the nature of information incorporated in an 'item' of a file. Consequently there may be author file, subject file, term file, and geographic file etc. In all these files various names of various entities like author, subjects, terms, places etc are filed in a definite sequence. Physically these files take the shape of card cabinets where a card tray is the storage unit, or a printed index where possibly the area of a column of a page is the storage unit of a file.

In the case of a non conventional system the physical form of a file may be a magnetic tape or a magnetic disc when a segment of a tape or a sector on a disc is the storage unit of the file. Normally, a file exceeds a storage unit either in the very begining or in due course of time. This growth in the totality of a file poses a problem in the physical handling of a file. The problem mainly pertains to the allocation of the storage space to various components of a file. For an effective storage, it is essential to know the distribution pattern of storage units in various components of a file. The problem can be explained concretely by the following example. In an author file the sequence is alphabetical and the probable components are the various letters say from A to Z. Then the problem is "how many storage units should be allocated to various letters A, B, C, ..., Y & Z.?". If the file size i.e. the number of 'items' in the file is T and the distribution of these items is uniform through A to Z, then space allocation is obviously T/26 for each letter. In practice, the distribution is never so simple and uniform.

ALPHABETIC SCATTERING OF SURNAMES

While engaged in the production and processing of annual Author indexes to the Indian Science Abstracts, we were faced with this problem. The poser was how many sector on a magnetic disc pack should be allocated to various groups of letters. This allocation required the information on the distribution of the surnames of various living Indian scientists. [A surname is deemed to include all the variants of the entry elements of personal authors]. This information was not available and we conducted a systematic study. We found some interesting results which we are communicating in this brief note. The detailed study will be published as a separate paper later on.

The distribution pattern obtained in this study is based on nearly 50,000 names appeared in the literature abstracted by the Indian Science Abstracts during 1965, 1966 and 1967. The percent distribution of these surnames is presented in the following table:

A	4.4	J	3.0	S	19.0
B	8.4	K	7.2	T	3.0
C	4.5	L	1.2	U	0.6
D	6.5	M	9.4	V	3.6
E	0.3	N	4.0	W	0.6
F	0.2	O	0.2	X	0.0
G	7.0	P	6.5	Y	0.3
H	1.5	Q	0.1	Z	0.1
I	0.6	R	8.0		

The arrangement of letters in the decreasing sequence of this frequency of occurrence of surnames,is S, M, B, R, K, G, P, D, C, A, N, V, J, T, H, L, I, U, W, E, Y, F, O, Q, Z, and X.

This information on the scatter of the surnames of contemporary Indian scientist has been of immense value in the manipulating of the author file on magnetic disc pack for processing the annual author indexes to Indian Science Abstracts by the digital computer available to Insdoc.

letters to the editor

PERSONAL DOCUMENTATION

I have read with interest the paper on the above subject by Bannur and Purandare (Ann Lib Sci Doc 1967, 14(4), 182-86). Although I subscribe fully to the editorial comments on the article, made in the same issue, I would like to offer the following points as comments:

The authors have noted that the particular scientist interviewed by them could find not more than 22% of his references from various current awareness lists of the local Information Centre. 78% of the references of this scientist were obtained from other sources as his interest was on subjects like methodology, pharmocological studies, engineering quality control etc. which could not be covered comprehensively in the documentation lists, where emphasis was mainly on antibiotics. The facts of the case only add substance to the doubt that a local current awareness service devoted exclusively to a very broad and well defined subject field has little value. It should be remembered that in the main field of interest of any organisation, apart from the availability of more comprehensive bibliographical tools, other channels of communication, like person-to-person communication-planned or unplanned, play a surprisingly great role. As a result, a local documentation list restricting itself to the main or core field of interest, without any decidedly better position in respect of speed, selection or approach, performs in many cases, the curious ritual of reporting what is already known to many. Very appropriately Menzel can be quoted here, who maintains, "in some contexts what a scientist most needs is not the coverage of his core field but rather of the areas which are secondary to his". I believe, the paper under reference has brought the context clearly where such a service is necessary. In other words the idea to which we should now give our serious attention is that whether, a local documentation list can be made more useful by more systematically covering the areas which are secondary to the main field of interest. I believe, this should be the correct interpretation of the expression, "user-oriented service".

R. Satyanarayana
INSDOC, New Delhi

REPROGRAPHY IN INDIA — A STATUS REPORT

[The following is an extract from a letter referring to a contribution by Shri K.S. Nagarajan published in the December 1967 issue of the Annals (p. 195-205) under the above heading].

... IASLIC has never in the history of its existence and development used any part of the premises and reprography facilities of the library of the Geological Survey of India, Calcutta, in any form.

IASLIC has got its own separate arrangements for reprography work through the help of its own appointed commercial photographers. The entire work of the Reprography & Translations Division is handled by its Honorary Secretary single-handed besides normal office-hours with the help of another paid assistant of IASLIC for procurement/return of documents etc. IASLIC's reprography services are extended on 'no-profit and no-loss' basis. The different materials as are available in the various libraries in and outside Calcutta including the G.S.I. Library are borrowed by IASLIC on Inter-Library Loan scheme through the co-operation of their Librarians. Such reprographic facilities of IASLIC are also extended throughout the world including INSDOC, Delhi against specific orders.

G. B. Ghosh
Hony. Secretary
Documentary Reproduction
and Translation Division,
IASLIC, Calcutta-12

[We have received another letter from Shri A.R. Chakravarthy, 44/9, B. T. Road, Calcutta, referring to the same article and pointing out the same facts].

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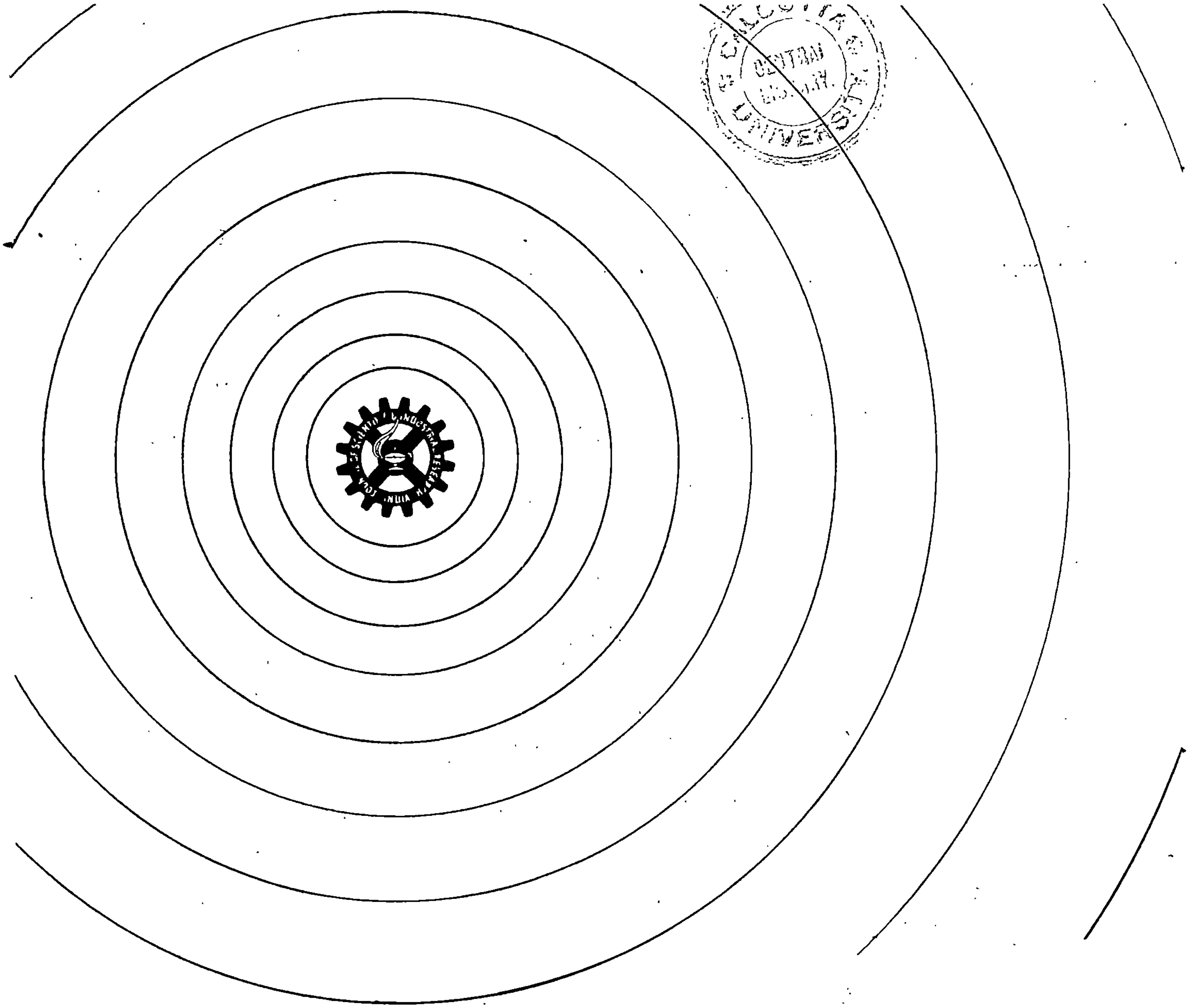

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Editorial

This issue of the Annals is devoted to Education for Librarianship in India and we are very fortunate in having for our contributors very knowledgeable people. Prof. Bonn, whose tenure of visiting professorship in the Delhi University is a mighty piece of good fortune for the Department of Library Science in that University, has contributed a very shrewd and understanding analysis on the state of library education in India. Smt. Malati M. Kanbur, whom several batches of library students remember with affection and gratitude for her lucid treatment of classification theory, has contributed a survey report. Prof. Skripkina and Director Firsov of the N.K. Krupskaya Institute of Culture, School of Librarianship, Leningrad, have written on the System of Education in USSR. We are indeed greatly beholden to all these contributors for giving us this privilege of publishing their observations.

Education for Librarianship in India has been following a certain pattern during the last decade and more. The pioneering work of Ranganathan at the Madras and Delhi Universities invested the course with an aura and an elan which the fortunate early batches will remember for a lifetime. The intellectual breakthrough achieved by Ranganathan in the field of classification excited many minds all over the world. It was only natural that the home-base in India should attract an outstanding team of colleagues and students to share this new experience. It is a perfectly legitimate development, that the first flush of discovery or shall we say of new adumbration, concentrated work in a field of investigation where outstanding thinking had been done. There was a joy and an exhilaration experienced by the team of devoted workers in the field of classification theory at having evolved a fairly satisfying answer to a very difficult problem. The intellectual exercise involved was both intense and deep. It was a happy accident that the new line of thought emanated from a Savant with a mathematical perspective. The finesse and skill needed to develop the new thought had to have this sort of a background. The breath-taking simplicity behind the postulation of the fundamental categories could only be arrived at after very intense ratiocination. All basic thinking is expressed with an utter simplicity, but the achievement of this apparent simplicity is the result of considerable intellection. This Archimedean feeling of "Eureka!" swept most of us off our feet and a curious result ensued. The adequacy or the inadequacy of enumerative classification came to be highly debated and the new thinking laid bare as with a scalpel the shortcomings of hitherto accepted notions. The intellectual exercise of disciplining micro-thought on first principles took on the character of a mission. New thought required new language and terms. Phrases and concepts were coined emulative of special disciplines in the scientific field. The corpus of the special language grew interpreting the new gospel. In India the study of librarianship very nearly became synonymous with expertise in classification technique. The journals devoted to the profession proliferated in studies on the scheme and the syllabi of the courses were heavily weighted with classification lore. Cataloguing converted itself into a pendant of classification and became the obverse side of the coin. The interesting result was one could come across earnest young men who could take off at a moment's notice into the empyrean of classification theory without ever being aware of the book as an entity which occupied a central place in service to the people. It is true there were parts of the training syllabus which mentioned organisation, administration and bibliography as other subjects to be studied. But there was a general impatience to get through these outer layers of the fruit to get at the kernel of classification and cataloguing! Even bibliography was a pendant to classification! In countless interviews one was faced with candidates who would wax eloquent on the octave principle, chain indexing, denudation and the rest, but the moment he was faced with questions about the world of books or access to information, he felt that these could be picked up in the stride and really did not constitute the core of knowledge.

What was more peculiar was that those who taught these subjects sought to look upon either the Prologemena or the CCC as of scriptural content, the esotery of which could only be got at by deep devotion to the canons contained therein. These enthusiastic young people never had any involvement in active servicing of books. They were recruited to the Department of Library Science on the analogy of appointing people for the scientific departments where we take a person with a first class Master's Degree or a Ph.D. straight on to the staff for teaching purposes without any practical experience either in industry or in any institution. In this connection, the American development of separate departments of library science with teachers completely devoted to full-time to their job was a disastrous example. Whereas the theory sounded good that you cannot have people flirting with both work and teaching at the same time, it was forgotten that the rich sophisticated complex of American library schools made it possible for a commerce between the live situation and the department a very real thing. Those who taught library science came from a background of library work and deep involvement in it. They were not merely innocents brought up on either this textbook or the other, happily blinkered by terminology which made their work a little more easy.

In September 1966, the Department of Library Science at the University of Delhi held a Seminar on the Teaching of Library Science, the proceedings of which have never been printed in their entirety. At that Seminar I had the privilege of presenting a paper, out of which I should like to quote the following passages as relevant to the theme of the issue.

"Librarianship is as much a profession as medicine, engineering, law and teaching. The objectives of professional training of the sort exemplified just now is to assure ourselves that the person so trained will fit into the context of his society, in such manner, as to assure the members of society of his competence in serving his fellow-men in his particular discipline. Whether it be to give information to people or to cure them of their ailments, or to create for them amenities in the way of roads, bridges and power plants, or protect the basic rights of individuals from encroachment by anti-social forces, the implication is that the person knows his job, can be expected to deliver the goods, in the sense that the information is timely and correct, the roads and bridges usable and enduring, the ailing well on the way to improvement, the people assured of the privileges given to them by the law of the land, and that our children are well prepared to meet the crisis of growing up in a difficult world. These seem to be simple statements, but the one basic truth behind all of them is, that the person turned out by any of the professional courses will have had a training, involving them into the practical aspects of their subjects, in such a manner as to enable them to be trusted with responsibility, which will inspire faith among those with whom they work. It must be remembered that medicine is a plenary discipline giving rise to surgeons, physicians, radiologists, with specialisations in Gynaecology, Ophthalmology, Paediatry and the like. Engineers have to branch out into civil, electrical and mechanical with a specialisation in electronics engineering, acoustics, nuclear engineering and the like. The teacher will have to branch out at various social levels, dealing with the rural folk, the children, the adults, the formal students, the handicapped and the like. Even so, the librarian will be called upon to work in the various contexts of rural, urban and highly sophisticated build-ups. The reason why I have stated these obvious facts is to emphasize that a professional discipline in a university has not a unindirectional purpose. It should allow the student, in conformity with his own academic perspective and temperamental inclinations, to choose for himself, how he is going to be of use to his fellow-men. . . . "

"There is one aspect of the present syllabus in library science as adopted in the various universities that greatly distresses me. It is this, that a student can get a bachelor's degree in library science and not know the work done by people of the stature of McKerrow and Esdaile. I know Esdaile is prescribed, but nobody ever takes the trouble to interpret him properly, nor are the questions such as demand any knowledge of the book. It is a great pity that library science as it is understood today has jettisoned out of the window knowledge about the book inculcating in the student a sensibility about printing, typography, illustrations and the like. Today descriptive bibliography, physical bibliography and historical bibliography are what are called peripheral or penumbral topics, and the defence for this state of affairs is that the student is never likely to ever come into contact with such old material, and therefore what is the point in burdening him with such information.

I will not elaborate this point, but I will only say that to some of us who have felt in our bones the beauty and the interest of this study, such a state of affairs is ghastly. We, in India are rich in manuscript and record wealth, and every year after independence, we are making history in various literatures, and the precious publications that are coming forth today will not be studied with the care and the affection that the historical-cum-physical bibliographer would devote to it. "

B. S. Kesavan

Professor George S. Bonn is no stranger to Indian librarians. Though attached to the Department of Library Science of University of Delhi as a visiting professor, his curiosity has prompted him to go afar frequently and meet and talk to quite a few librarians, library administrators and library science teachers and students, to observe closely the working of a number of libraries, of all types, and teaching departments, and also to attend a number of library conferences and meetings in this country.

For Dr. Bonn, interest in library science grew out of his deep interest and involvement in technical literature, both as a reader and writer-editor. In fact, after graduating in the subject of Chemical Engineering in 1935 and taking a Master of Science degree in the following year, he started his career as a research engineer and technical writer. This was interrupted during the war years when he took up a U.S. Army assignment. After the war he returned to technical writing and editing, but soon decided to join the Graduate Library School of the University of Chicago in 1947. After receiving the degree of Master of Arts in Library Science, he worked in a number of important libraries. In the list of libraries served by Dr. Bonn, there are such important and challenging positions like that of the Librarian of the Technological Institute, Northwestern University, Chief of the Science and Technology Division, New York Public Library etc. In his teaching assignements he has been ably associated with the Rutgers University, Japan Library School of the Keio University, and the Graduate School of Library Studies, University of Hawaii, from which place he came over to Delhi.

THE STATE OF LIBRARY EDUCATION IN INDIA

George S. Bonn

After getting more or less settled in Delhi, among the very first things I did to help me to be more useful here in India were (1) to subscribe to several Indian newspapers and to a number of Indian cultural and current-affairs magazines, (2) to subscribe to or to buy all the Indian library publications I could find, and (3) to visit libraries of all kinds to gain first-hand knowledge of the state of Indian libraries (at least of some of them) and to talk with working librarians about the state of Indian library education as they saw it judging from recent products.

As might be expected, the visits and talks were especially rewarding and revealing. The state of the libraries naturally varied widely, depending on the size, type, affluence, and administration of each one. But professional opinions about library education were remarkably in agreement: it is simply not adequate.

The shortcomings in library education, as identified by the 40 or 45 Delhi librarians, affect three very important elements: (1) the recruits accepted by the schools, (2) the aims of library education, and (3) the content of library education. The aims mentioned are those, besides the more obvious ones, which the librarians feel need emphasis here in India but which are not getting it to the extent they should. These can be considered shortcomings-by-default, as it were. In addition, the librarians called attention to a group of nation-wide needs of the profession itself (not directly related to library education as such) which can be considered shortcomings-through-apathy, of its products.

I would like first to present my findings and to make a few comments about them, and then to talk about Indian library education from the point of view of a sympathetic outsider. Here are the shortcomings in present-day Indian library education that were pointed out to me by Indian librarians:

Regarding Recruits

1. Too many seem to be cast-offs from other parts of organizations or from more difficult curricula, or to be just marking time until they get jobs (of any kind).
2. Their general background is very poor. They should have, e.g.:
   a) knowledge about India and its regions, states;
   b) knowledge about world movements, trends;
   c) a broad general education, a wide background of knowledge;

   d) a special and continuing acquaintance with some subject field; and
   e) a knowledge of language (especially Indian, but also foreign).
3. They need a good public relations point of view.
4. They need knowledge of psychology.
5. They should be "live" individuals, who are interested in developing themselves and in continuing their learning.

Regarding Unemphasized Aims of Library Education

1. To stir up students' consciousness of, and curiosity about, the world around them.
2. To stimulate students to be creative.
3. To instil in students the desire to keep up with librarianship after graduation and to become involved in professional associations (not merely to become members).
4. To develop in the students a professional point of view.
5. To emphasize the career aspects of librarianship.
6. To give students as much practical "on-the-job" experience as possible (while in library school) in, e.g.:
   a) "floor service";
   b) office routines (e.g., government procedures);
   c) management; and
   d) administration.
7. To stimulate all librarians to rise to the levels of the new ratings, especially in academic libraries where ratings are comparable with teaching staff ratings.

Regarding Content of Library Education

1. The intellectual content needs to be raised.
2. There is too much emphasis on "technical" matters rather than on substantive.
3. Rapport is needed between teachers and practicing librarians.
4. Outside practicing librarians should give occasional lectures.
5. Specific needs: To teach, especially:
   a) service, public service, personalized services, social services, personal attention, personal involvement, actual handling of materials, human relations, or whatever else it may be called;
   b) reference tools - what is in them, how to use them;
   c) reference work and "how to find out";
   d) administration (theory);
   e) management (practice);
   f) government publications;
   g) Indian tools;
   h) how to index, how to abstract (especially in science-technology) without worrying overmuch about the mechanics involved;
   i) proper bibliographical entry system, and consistency in its use;
   j) consistency in using any classification system;
   k) school library work (elementary, secondary) - work with children, young adults; and
   l) sources and resources in local area (e.g., Delhi), in India, elsewhere, and how to find out about other sources and resources.
6. Graduates should know:
   a) all the work and activities carried on in libraries since many one-man libraries are being started;
   b) the whole library picture (the total job, culminating in and directed toward service to users) besides one's own part in it, to develop internal smoothness of operation and cooperation instead of friction and competition;
   c) what library work is (service to users) and how to instil understanding and appreciation of what library work is in the minds of the whole library staff (professional, non-professional);

d) the needs of small public libraries in local language areas;

e) the needs of (e.g.) Delhi libraries; and

f) the important professional library journals, other publications, societies, leaders, trends, happenings, developments, collections, etc.

Regarding Nation-wide Needs

1. Strong national library associations.
2. Emphasis on professional (rather than trade) point of view among librarians and in library associations.
3. Indian tools for reference work and for bibliographical control if they do not already exist.
4. Cooperation and coordination in indexing, abstracting, and other documentation activities.
5. Improved photoduplication services.
6. Humanizing of chief librarians: too many are inaccessible, and they talk only to people of the same rank.
7. Continuing appraisal of Indian librarianship and of Indian library education. Has "library science" become a "sacred cow"?
8. A system of accreditation or certification of library schools based on nationally-accepted professional standards.

Comments

It is at once apparent (1) that these same (or similar) shortcomings can be identified in library education programs everywhere in the world, (2) that a good many of these shortcomings can be pointed out in other professional education programs in universities almost anywhere in the world, (3) that a number of these shortcomings can be blamed on the pre-professional education programs of the students or on the education system or on the apathy of the profession or on tradition (as you choose), (4) that all these shortcomings and many more besides have been examined and discussed in innumerable articles and seminars and conferences almost ever since the programs began, and (5) that in spite of these shortcomings Indian (e.g.) library (e.g.) education programs have turned out many good - and quite a few excellent professional librarians (e.g.).

It is also true, as I am continually learning, that many other Indian professional librarians (including numerous recent graduates) and an increasing number of library school students in Delhi and elsewhere are not satisfied with the existing Indian common library school program. As this article was being written, in fact, returns were coming in from the recent alumni-record questionnaire sent to all graduates of the Department of Library Science of the University of Delhi, which had included questions on library education. Most (80%) of the M.Lib.Sc. graduates and many (40%) of the B.Lib.Sc. graduates took the trouble to comment on these questions, and their comments whole-heartedly corroborated my findings (above) especially those dealing with the aims and the content of the programs.

But just as it was with Mark Twain's weather, everybody talks about it but nobody does anything about it...

Surely there are in India public-spirited educationally-minded professional librarians who are willing and able to look at the evolving Indian library situation objectively, dispassionately, and intelligently with a long-range, pro-Indian, non-partisan point of view, and then to relate their findings to Indian library education and to make appropriate recommendations for the improvement of library education in India.

Surely there is in India a public-spirited professionally-minded library school that is willing and able to develop and to put into practice a program of library education based on these recommendations which will effectively serve the needs of this evolving Indian librarianship.

Just as surely there is in India no outsider (i.e., foreigner), however good his motives, however sharp his intellect, and however experienced and willing he may be, who is able to prescribe precisely what ought to be done to improve either Indian libraries or Indian library education. In a dispatch from Washington head-lined, "Outside Guidance for Growth Not Infallible", in the March 9, 1968, issue of The Hindu, India's former Food Minister, Mr. C. Subramaniam, pointed out that no outsider could understand the various complex forces functioning in a developing country or could prescribe on the basis of his own experience the rules of growth and development in such a country. "The change," he said, "has to come from within." He was addressing the annual meeting of the Society for International Development in Washington, and his words are pertinent to international library development, too.

All that any outsider can do is to look at Indian libraries and Indian library education from his own professional point of view, to try to understand what he sees, and then try to help Indian librarians not to make the same mistakes his own country's librarians made some years earlier, but to profit by them, and to encourage Indian librarians to think and to act, "from within".

It seems to me that an outsider can be most helpful in India as a catalyst, as one who meets and talks with Indian professional librarians, with library school teachers, and yes, with library users, and gets them to interact and react with each other, as many as possible, as often as possible, as freely as possible, as professionally as possible. There must be frequent professional dialog between librarians and library school teachers and between librarians and library users, at all possible levels. There must be understanding of what librarianship is all about: effective library service. But, above all, there must be action: to do what is best for India, for Indian libraries, and for Indian library users. Only then will Indian librarianship gain - and really deserve - the recognition, the appreciation, the respect, and the status it is entitled to.

A VIEW FROM THE OUTSIDE

Conditions Affecting Library Education

Professional library education must, unquestionably, serve the identified needs of the library profession, but the pattern of this education naturally will vary from country to country depending on local conditions. A few of the more obvious local conditions would include (1) the philosophy and the pattern of education itself, (2) the state and the status of librarianship, (3) the calibre and the background of library school students, (4) the competence and the experience of library school teachers, (5) the adequacy and the availability of teaching materials, and (6) the economic level and the cultural level of the country.

But even librarians need to be reminded from time to time that librarianship by definition (by Law?) is not static, it is not concerned merely with the status quo, it is not merely a dependent, a satellite, a parasite profession. While it does get its motivation and its nourishment largely from the society of which it is a part, it also, in its own way, motivates and nourishes that society. So librarianship moves forward, not only with its society but also ahead of its society, and library education necessarily must also move forward, not only with librarianship but also - and purposefully - ahead of librarianship.

In any country, therefore, and especially in a developing country, there are certain other important factors besides the prevailing local conditions that have considerable bearing on local librarianship and local library education and that must be taken into account in any discussion of the library profession in a particular country. These factors include (1) professional foresight and the desire and the ability to bring about change, (2) professional resourcefulness and the desire and the ability to make full use of existing library materials and of practicing librarians (including oneself), (3) professional unity and the desire and the ability to co-operate and together to promote librarianship, and (4) professional understanding of the aims and the standards of librarianship and of library education throughout the world and the desire and the ability to adapt, or even to adopt, whichever seems to be worthwhile among these for local librarianship and library education.

Aims and Standards: Of these four factors the most important, in some ways, in a developing country is the last one about aims and standards of librarianship and library education. And this one also may well be the most troublesome to implement, for economic reasons if for no other. Yet aims and standards must be high, at least as high as those in the countries against which a developing country is comparing its overall progress, or there will be little or no motivation for improvement.

Fixing aims and standards for librarianship and library education is one thing; performing up to them is quite another, especially in a country which must set national priorities for the most effective disposition of its national resources, and in India, at the present moment, librarianship and library education are quite likely not at the top of any national preferential list. But, I repeat, internationally respected aims and standards are essential to the development of Indian librarianship and library education.

Clearly, then, Indian librarianship and library education will benefit most, both now and in the foreseeable future, from aims and standards that (1) are set high, (2) are relevant to India, (3) have well defined, regular, operational phases, i.e., realistic, attainable, intermediate goals, and (4) are appropriately objective or subjective as each case requires. But they must be reasonable, reliable, and reachable.

Let me give a few examples of ways in which even reasonable standards (or aims or goals) may be misinterpreted.

1. Research Library: Must be adequate to serve the needs of research scholars.
    (a) But suppose the research "needs" themselves are regularly of a very low order. Almost any library is adequate in this case, as I found in Canada a few years ago. By the same token, absolutely no library is adequate when the research needs are regularly of a highly specialized nature.
    (b) A physicist I know here was quite happy that the Delhi University library could procure a photocopy of an article he wanted from "an obscure Argentine journal" in "only ten months" from, I believe, INSDOC which got it from an American library. But, as a Canadian scientist once told me, if he could not see a desired reference within a fortnight he could no longer use it! (A week's delay in getting a reference is considered acceptable by most research workers in Canada).
    (c) I was pleased to learn that the Delhi University library is now adding books at the rate of 12,000 cataloged items per year. By Indian standards, 12,000 is high; the average annual accession rate among 36 University libraries is 9,800. But among the top 50 University libraries in the U.S. in 1964-65 the average rate was about 82,000 volumes per year; the range was from 21,000 to 258,000. (The average total holding of these 50 libraries was about 1,217,000 volumes; the range was from 795,000 to 7,445,000).
2. Personnel: Must be as many as required to do the work expected of the library.
    (a) But suppose each person is expected to do only one specific task. What happens when absences or vacancies occur?
    (b) In one specialized library I visited in Delhi I learned of a "large" processing backlog because, I found on inquiry, the one librarian had no assistant and he, of course, was the administrator.
    (c) In another Delhi library there was no written library policy or precise directive regarding the librarian's duties. So he did nothing.
    (d) In still another Delhi library there were four librarians and three assistants, and there was authorization (but no money) for two more librarians. Documentation lists of various kinds were from two months to two years behind, although rush reference work for the research staff was taken care of on request. When asked how to convince the top administration that the library did, indeed, need the two allotted persons, I suggested that considering the size of the collection, the number of acquisitions, the clientele, and the work being done, two professionals plus two clerk-typists ought to be quite enough to do everything - by American standards. (But Indian standards naturally have precedence here).

Obviously, standards of performance in libraries vary greatly from one library to another, from one country to another. So do the aims, the goals, and the levels of professional library practice. How high are India's, nationally and internationally? The answer is crucial to the continuing development of library education in India and, indeed, of India itself.

The Student

One of the important elements of any educational program is, of course, the student himself. But all too often he is completely forgotten or at best simply ignored in discussing and comparing education in different countries.

Take, for example, the student in an American accredited library school. For one thing, he has had at least 16 years of formal schooling, 12 in primary and secondary schools and four in college or university, with progressively more attention being paid to both books and libraries during these 16 years. For another, he probably has had several years experience in some line of work which drew his attention, directly or indirectly, to books, reading, education, research, information, documentation, or some other library-related interest; very few students go to library school immediately after receiving their bachelor's degrees. For still another, he therefore probably is in his late 20's or early 30's, is relatively mature, and is likely to be quite serious about his purpose in being in school again. As a matter of fact, more than half the students in American accredited library schools (58% in 1963-64) are part-time students who are at the same time working (full - or part-time) in some library or other information-centered organization.

Usually, then, students in an American accredited library school are reasonably well motivated, are quite willing and able to work hard and think for themselves, and are rather practical in their assessment of library education (and hence often critical of emphasis on detail, of frequent repetition, of too elementary an approach, and of lack of experience or authoritativeness on the part of the teacher).

The student in an Indian library school, on the other hand, has had in most cases only 14 years of formal schooling, 11 pre-college and three college, with very little, if any, attention being paid to either books (excepting textbooks) or libraries at any time during these 14 years. Very rarely has he had work experience, library-suggesting or any other kind; he ordinarily goes directly from his bachelor's degree course into library school although there may be one or two years of unemployment between the two. He usually, therefore, is in his early 20's (he may matriculate at 19), is probably still in adolescence, and is likely to look upon library school as merely a one-year last-resort inurement leading, he hopes, to just a job - any job.

Students, then, in the Bachelor of Library Science course in an Indian library school (the first post-graduate year) naturally tend to be rather aimless, woefully naive about libraries (and hence about library education), and not at all prepared to work or to think very much more than they did in their under-graduate courses. (The one-shot annual-or-terminal examination-centered Indian education system, still quite common at all levels, seems to contribute to a cram-memorize pattern of learning, or at least of question-answering, rather than to a step-by-step-reason pattern). The library school must motivate, teach, and activate students intellectually, all within this context.

However, students in the Master of Library Science course (one year beyond the B. Lib. Sc.) frequently are more highly motivated and more mature and they often have had some library work experience. For example, a number of M. Lib. Sc. students are deputed for the course by libraries in which they have been working for a number of years, so these students are more likely to have a greater sense of purpose as well as a better idea of what library work in India is all about. All the M. Lib. Sc. students, of course, must already have a B. Lib. Sc. degree so they are naturally older on an average than B. Lib. Sc. students. Some of the M. Lib. Sc. students, to be sure, are B. Lib. Sc. graduates of a previous year who have not been able to get jobs, but at least they are familiar with library parlance, if not with library practice.

The library school has the opportunity (indeed, the responsibility) therefore, to build on whatever background is already present in M. Lib. Sc. students, and thus to broaden their horizons, to develop their special interests, and, in general, to raise their sights to higher goals and better practice of professional librarianship, including, particularly, good library service. But, does it?

The Teacher

It is axiomatic that a teacher must, to begin with, know the subject he teaches. He must know its principles, its personalities, its traditions; and he must know its status and its possibilities in the worlds of modern scholarship and of current affairs.

If that subject has certain professional aspects, such as societies, conferences, a body of literature, and social significance, then the teacher must participate in its professional activities -- be active in its societies, take part in its conferences, peruse its journals, add to its literature, extend its intellectual frontiers through research, promote its social usefulness, and take pride in its work -- not only because each teacher, if anyone, must take a leading part in developing the standards, the point of view, and the image of the profession, but also because each teacher must describe, interpret, justify, and advocate the profession to his students as a vital, creative, socially valuable, and personally gratifying one.

If that subject has certain practical aspects, then the teacher must also have first-hand experience (both work and observation) in the subject as well, not only to enable him to teach the practical parts more realistically and effectively but also to allow him to personalize and dramatize the subject to make it seem both dynamic and attractive to his students.

A good teacher knows the principles, the practices, and the professionlisms of his subject and he keeps aware of its changing interrelationships with other disciplines and with current events. He perforce reads widely. A good teacher not only informs, describes, and explains but he also inspires, encourages, and motivates. He must indeed, that is, be good at teaching.

It is self-evident, therefore, that a teacher in a library school to be a good teacher must first know the principles, practices, and professionalisms of librarianship, particularly, of course, of his special area of librarianship. He also has to know what is going on in the world of letters and in the world of affairs, and he has to know how these events affect librarianship (and vice-versa). In addition, especially here in India, he must be a past master at the art of inspiring and motivating students, he must be an expert in the art of teaching. Above all, he must be well-read — certainly in librarianship, but also in as many other areas as his teaching warrants and his time permits.

But even a good library school teacher must have something truly substantive and relevant to teach if he would continue to be a teacher. Furthermore, that "something" must be properly organized within its own area of librarianship, properly articulated in the sequence of subject development, properly integrated with all the other areas of librarianship, and properly related to other areas of knowledge. But remember, whatever is taught in a library school must have substance and it must be relevant to the needs of the library profession.

A meaningful, profitable, and stimulating course in library education anywhere in the world, therefore, requires (1) that its teaching staff have first-hand knowledge of the present state of librarianship and of the immediate and long-range needs of that library profession wherever it might be; (2) that the individual teachers be professionally active, competent, experienced, informed, and well-read; (3) that the curriculum (a direct responsibility of the teaching staff) be well-constructed, substantive, and relevant to the needs of the profession; and (4) that the necessary teaching and learning resources (bibliogragraphic tools, professional publications, equipment) -- another direct responsibility of the teaching staff -- be up-to-date, representative, comprehensive, and adequate to serve all the teaching and research needs of the staff and the students.

Teachers in American Library Schools

Administratively, the accredited graduate library school in the United States and Canada is an independent teaching unit with its own dean or director, a permanent teaching staff, a separate budget, and more or less complete control over selection and admission of students subject only to the overall regulations of the graduate school and of the university of which it is a part. It has no formal tie at all with the university's library or librarian although its own library, if it has one, probably is administered as a branch of the university's, and the school itself may or may not be housed in the university library building.

Every accredited library school in the United States and Canada has a permanent full-time teaching staff. In 1966-67 the 38 accredited schools had an average of 9 full-time teachers per school; the range was from 4 to 18. In addition, the schools had an average of 12 part-time teachers per school; this range was from 0 to 21. The total number of teachers per school averaged 21, and ranged from 6 to 32. (The minimum number of full-time teachers considered acceptable for accreditation of a library school is 4, but 5 have recently been proposed as a more realistic minimum because of increased enrolment).

In every school every full-time teacher and many part-time teachers participate in the administration of the school by serving on standing or ad hoc committees which deal with such matters as curriculum (coordination, development, planning), course content, policy, recruitment and selection of students, staff (selection, promotion, tenure), libary school library, evaluation, and so on. In addition, members of the permanent staff will serve on graduate-school or university-wide committees and academic bodies of various kinds.

The results of a few studies made on teachers in American library schools may be of interest at this point, not as goals to aim at but as records of the status quo which have elicited many questions and much concern from persons seriously wondering about the present and future state of library education in the United States and Canada.

A study [1] based on 1962 staff rosters showed that 86 per cent of the teachers in 32 accredited library schools reporting were between the ages of 36 and 65. The breakdown went like this: ages 26-35, 10 per cent; ages 36-45, 36 per cent; ages 46-55, 34 per cent; ages 56-65, 26 per cent; over age 65, about 3.5 per cent. (One teacher in the study was below age 25). All but two of the full-time teachers in this study had some academic training in librarianship: 37 per cent had master's degrees and 26 per cent had doctorates. In addition, 31 per cent had master's degrees and 15 per cent had doctorates in other areas. Most of the teachers had been recruited from library administration positions but the length of their pre-teaching experience was not reported. However, since professional experience has long been the main criterion for selecting library school teachers in the United States, it must have been noteworthy if not extensive. It might be mentioned that 3 to 4 years of professional experience in a responsible position is usually considered to be a minimum qualification for a library school teacher and anything up to 10 years is considered advantageous; more than 10 years, some think, may be as much as a liability as an asset [2].

In 1963 a study [3] was made of the publication productivity of a random sample of full-time library school teachers. It was found that the mean per faculty member for the years 1959-1963 was 4.9 publications, about one per year. Almost half (49 per cent) of the publications counted were periodical articles, 23 per cent were reviews, 15 per cent were papers (conferences), and the rest (about 13 per cent) were books. Not surprisingly, in those schools with doctoral programs the mean was 10.5, and in those without such programs the mean was 2.5. Also, as might be expected, nothing at all was published during the 5 years by 14 per cent of those in the doctoral-program schools and by 33 per cent of those in the non-doctoral-program schools. On the other hand, some of those who wrote, evidently wrote a lot, and nothing was said, of course, about the quality of what was published.

Teachers in Indian Library Schools

To the best of my knowledge there are no similar surveys of teachers in Indian library schools excepting, possibly, the more general one undertaken by the University Grants Commission Review Committee, 1961-1963 [4]. Tabulated returns of Section G of the questionnaire (Department of Library Science and Staff) appear in Appendix 2 of the report of this committee. While the returns may not be complete, some of the results may be at least suggestive of the pattern of library school teaching staffs in India.

In the 14 schools reporting (6 years ago), there were 75 teachers, an average of 5.4 per school; the range was 2 to 11. Of these, 17 (23 per cent) had master's degrees in library science and 3 (4 per cent) had doctorates. In addition, 49 (65 per cent) of the teachers had master's in other areas and 6 (8 per cent) had doctorates. Not counting the 200 papers reported by one staff member, the average number of publications reported per person per career, so to speak, was 2.1.

Of the 75 teachers listed, 17 were identified as readers or lecturers (some specifically of library science) in 7 schools and most, presumably, were full-time; in one school the lecturer worked in the library 2-3 hours a day. All other teachers were part-time and were drawn from the university (or other nearby) libraries or, in one case, subject departments. Only one school seemed to have its own head; in all other cases the university librarians were also heads of the departments of library science, although four of these departments were reported to be independent. In the 6 schools with the 16 full-time teachers, then, the average number of full-time teachers was about 2.7; the range was from 1 to 6. The average administrative (professional?) experience of 15 of them (no data on one) was 6.5 years; the range was 1 to 20 years. Teaching experience (of 15) averaged 2 years; it ranged from 1 to 3, but remember the report is now 5 or 6 years old.

Double-duty Librarians

The only reason I have heard for the double duty of university librarians as heads of departments of library science is the shortage in India of qualified persons (but, in any case, it is said, all the departments are relatively small.....). I must say this is a rather disparaging point of view to take with regard to Indian librarianship (and rather downgrading with regard to library education). Perhaps I should ask, then, if there will always be in India persons who are qualified to handle both jobs at the same time and to devote to each one the time, energy, and professional attention each job needs to insure the effective, user-oriented library service (and the requisite preparatory library education) that India itself requires, deserves, and must get even now and particularly in the creative, productive future.

By the same token, running a full-time library school entirely with a part-time staff of teachers-cum-librarians on the pretext of better utilizing personnel in short supply (or of making sure that teachers have practical experience) not only disparages Indian librarianship and downgrades library education but also defrauds library users of proper service and gives library school students something less than their money's worth. Proper library service requires full attention and a profitable library education requires a core of full-time teachers whose only concern is planning, developing, evaluating, improving, and implementing the library education program on a continuing basis.

Part-time teachers do have an important contribution to make in library schools in areas of their full-time job specializations or of advanced studies, rather than in areas of broad, general, or fundamental interest. Permanent, full-time teachers (even as few as two) give a school stability, continuity, personality, organization, and a definite sense of purpose. Students deserve no less. My own experience as a teacher-and-librarian-in-one (for a much more pragmatic reason) has convinced me that such a two-in-one job is not always wholly satisfactory to the person who holds it, either.

Admittedly, there is a shortage in India of older, scholarly, highly respected, long experienced, traditionally-qualified librarians (and, of course, library school teachers). There is everywhere, and all things considered it's probably just as well what with the tremendous changes in librarianship, yes, and in opportunities for service that are upon us throughout the world. What bothers me more is the over-supply of librarians (and library school teachers), old or young, all over the world - including India - who lack some or all of the qualities so desperately needed by librarians and library educators today: adaptability, awareness, common sense, courtesy, discrimination, enthusiasm, imagination, initiative, judgment, leadership, maturity, originality, responsibility, tact, understanding, willingness, vitality, and zeal; a feeling for communication, cooperation, experimentation, innovation, and participation; an ability to be constructive, creative, decisive, expressive, and receptive; and a truly professional point of view.

But surely there are in India librarians who are known to have many, if not all of these qualities. These must be found, encouraged, and given opportunities to prove their worth as full-time library school teachers and department heads - before it is too late. It is high time that library education in India be taken seriously.

The Curriculum

Library education is undergoing critical review all over the world. The well-publicized knowledge "explosion", the rapid development (and glamour) of mechanical and electrical devices of various kinds, the growing attention of government to the information needs of the nation, the increasing availability and use (as well as cost) of library resources, the spreading emphasis on identifying and serving the interests and library needs of individual users, and the multiplying demands on the knowledge (and the time) of professional libraries in every area of librarianship, all are having a very decided impact on library education and on the curriculum of each of the library schools.

The Curriculum in an American Library School

In the United States the first professional library degree is the master's degree, granted now by 44 accredited graduate library schools after approximately one year's specialized study beyond a 4-year bachelor's degree. An accredited school is one which, on inspection at 5-year intervals, meets nationally-accepted standards established, published, and applied by the American Library Association through its Committee on Accreditation.

The curriculum is just one of the parts of a library school that are examined closely when the school is visited by an accreditation team of the American Library Association, but it is the one part, perhaps, that gets the most careful attention. (Other parts, a few of which have already been discussed, are the teaching staff, the students, the library resources, the physical facilities, and the financial support).

Briefly, there are four basic elements looked for in a good library school curriculum: (1) core (introductory) courses (i.e., papers) covering the principles, processes, materials, and techniques of librarianship; (2) specialized courses in the various areas of librarianship such as school, public, academic, and special libraries or cataloging, reference, administration, audio-visual materials, and so on; (3) related courses outside the library school, e.g., chemical bibliography, curriculum development, psychology, sociology, etc.; and (4) provision for continual evaluation and revision in the light of new developments in librarianship, in library equipment, or in any area that might affect librarianship.

(After noting what courses are regularly offered in the school's catalog (i.e., prospectus), the visiting team studies the syllabus of each course to determine its coverage, its scope, its up-to-date-ness, the kind of assignments, the adequacy of reading lists, and so on. The team also looks at sample student written work and visits actual classes if time permits).

Usually the core courses are required (i.e., prescribed for all students) and all the others are elective (i.e., optional) but the number of required courses varies from school, from 0 to 10 with 4 as the norm. Each student's advisor will likely prescribe additional courses depending on the kind of library and the area of librarianship the student prefers. Beyond these the student may take as many electives as he wishes (and has time and money for), even above the minimum 12 to 15 courses necessary for a degree. (Actually, the degree depends on the number of "credits" the student acquires during his study program, and the credits per course depend partly on the number of hours per week the course meets. These vary from school to school).

One other minor characteristic of a good library school program is convenient scheduling of classes, convenient, that is, to the students who may wish to take them. For one thing, most American universities operate on the semester, trimester, or quarter system, often with a separate summer session in addition. Library school core courses thus can be, and usually are, offered two, three, or four times a year enabling a student to enter library school at the beginning of any term and still take his required introductory courses in proper sequence.

For another thing, many American library schools have more than one section of certain courses (especially the required ones) which will meet at quite different times during the week. Many other courses (the more specialized ones) are often scheduled to meet late in the afternoon, in the evening, or on Saturday, so a student can work out a desirable program which will suit not only his needs but also his convenience, a most important point to consider since so many students in American library schools are working somewhere either full-time or part-time. In many schools each course section meets only once a week but for 2 or 3 hours each time, depending on the course and its content at a particular school.

In the two American library schools with which I am most familiar, full-time students take 5 courses each semester for two semesters and two courses during the previous or following summer session for a total of 12 courses (or 36 credits, since each course carries 3 credits) in approximately one calendar year. Each course meets 3 hours per week for 15 weeks (one semester) or an equivalent time during the summer session, for a total class time of 45 hours per course (i.e., paper). This pattern varies somewhat in other schools but the end result is about the same.

The Curriculum in an Indian Library School

In India the first professional library degree is the Bachelor of Library Science (B. Lib. Sc.) granted by 6 universities the Diploma in Library Science (Dip. Lib. Sc.) granted by 9 universities. In the past each has been granted after an academic year of study at the post-graduate level but the entrance requirements and, presumably, the papers studied for the B. Lib. Sc. have usually been at a little higher level. Gradually, however, the requirements for the two degrees are coming closer together and it will just be a matter of time when the Dip. Lib. Sc. disappears entirely having been replaced by the B. Lib. Sc.

The B.Lib.Sc. courses (i.e., curricula) are all very much alike. There are 8 papers, all are required, and all run through the academic year of about 30 weeks from July through April. They cover certain basic principles and practices of librarianship - administration, organization, document bibliography and book selection, reference service, classification (theory, practice), and cataloging (theory, practice) - and all papers carry the same weight. There are no part-time students so scheduling of classes and tutorials can cause little inconvenience to students (or teachers) excepting what may result from difficulties in reaching early classes because of delays in public transportation.

Four universities also offer (or did offer) courses leading to Master of Library Science degrees, a prerequisite for which is a B.Lib.Sc. degree. One of the universities is experimenting with a program which is quite permissive in allowing students to select areas in which they would like to specialize and the students themselves have been particularly selected to take the course; this program will be interesting to watch. The other three programs are quite similar and consist of 8 papers, in two of which students have a choice of topics allowing some specialization. The papers cover universe of knowledge (its development and structure, intended as groundwork for advanced theory of classification); depth classification (theory, practice), advanced cataloging (theory, practice); choice of public, academic, or research/technical library system, and documentation; bibliography and literature of either the humanities, natural science, or social sciences; and a sessional project on an approved topic within one of the foregoing areas. (All choices, however, are not always offered, and there is some variation from school to school). Again, all papers run through the academic year, all papers carry the same weight, and there are no part-time students in the programs.

In the one Indian library school with which I am familiar, each paper in both the B.Lib.Sc. course and the M.Lib.Sc. course meets two hours per week for the 30 weeks for a total class time of 60 hours per paper. It might be mentioned that the University Grants Commission report referred to earlier recommends a total of at least 400 working hours during a session for the B.Lib.Sc. course, or at least 50 hours per paper. For the M.Lib.Sc. course the report recommends 300 - 325 hours for lectures, tutorials, and seminars plus whatever is needed for student guidance and student practicals. So it would seem that the 60 hours per paper allotted by this one school is not at all unreasonable or unrealistic under Indian conditions.

Time vs. Variety

However, an outsider judging the curriculum of an Indian library school by American experience is at once struck with what seems to be an excessive amount of time devoted to the teaching of each paper during the one-year course and a resulting restriction on the variety of papers that can be studied during that one-year period. In American library schools, as we have seen, each course (i.e., paper) may meet a total of 45 hours, but in Indian library schools we find that each paper may meet a total of 60 hours and my impression is that less is covered at that.

On inquiry, the point is made that it is the practice of Indian teachers to go into great detail in presenting class lectures, to spell out each topic carefully, and to cover a large variety of examples; consequently more time must be spent on each topic and fewer topics may be covered in any one paper. As to the reason for this practice, some librarians have suggested simply (and perhaps facetiously) that Indian students are less educated and informed than, for example, American students or that Indian teachers are less competent and experienced than, for example, American teachers, hence the need to spell out each topic in so much detail with so many examples!

But looking at the practice realistically, I have come to believe that there are more fundamental, perhaps more credible, reasons for it. And one of these reasons, as I see it, is the pattern of Indian experience.

On one hand, this method of teaching is what all Indian students - and their teachers and *their* teachers before them - have always been accustomed to, so they always expect it. On the other, the idea and the reality of librarianship are almost unknown to the majority of Indian library school students and even to many teachers who must normally specialize in particular aspects of the subject but who may have little or no experience or knowledge in the area, save what they gained in library schools as students themselves not long before.

With limited prior experience both in methods of personal intensive study and in what is being taught, students must perforce learn by spoon-feeding and often at the same time from teachers who are just one spoonful ahead of them. So each paper drags along with the brighter students getting bored (just as they do anywhere when they have too little to challenge them, too little that is different, too much that is repetitious) and with all students getting cheated of a broad, well-rounded education in librarianship by the meager content and variety of the papers available to them.

There is another and, I believe, much more decisive reason for the relatively slower pace and leaner content of papers offered in Indian library schools, one that happens also to be recognized as a root problem in all higher education throughout India. And this is the language problem, although only one particular aspect of the whole problem concerns me at this point: the relegating of English to, mark you, a "library language" instead of maintaining it as a "learning language", albeit a secondary one, which it has long been.

For, paradoxically enough, most of the important professional literature of librarianship, most of the important bibliographical tools, most of the important reference works, indeed, most of the books that library school students (and librarians, too) read, evaluate, and discuss are in English and will probably continue to be in English for some time to come. Thus English is and will continue to be, quite literally, the (not "a") "library language" and library school students (and librarians), if anybody, ought to be proficient in both written and oral English.

It is my impression, however, that many present-day Indian library school students - certainly through no fault of their own - are just not adequately equipped to handle either written or oral English very rapidly, as rapidly as, for example, their counterparts in American library schools. The reading speed of a sampling of good M.Lib.Sc. students averages 10 to 15 text-book pages per hour (or roughly 70 to 100 words per minute) of substantive material such as appears in the literature of librarianship. Some students, of course, do read faster than that, and many students read light material very much faster. But it is obvious that at these rates not many journal articles and only very few books, once they are located, can be digested in the time available to students to do their studying outside the classroom. So reading assignments, literature surveys, evaluations of library tools, written work, and even class lectures and discussions simply take more time and, consequently, fewer topics can be covered. (Studies show that a good college student or adult reader in the United States reads 200-300 words per minute of average text-book material, and it has been said that students there must be able to read 200-400 words per minute, depending on the text, in order to succeed in the average college. For comparison, the average full column (half of a page) of the Annals of Library Science and Documentation contains about 325 words).

This is not the place to go into the complexities and other ramifications of the language problem in India, but its effect on Indian higher education is already quite evident. Yet, very little attention seems to have been paid to it in Indian library literature. Three rather obvious aspects of the problem that need looking into come to mind immediately: (1) adequacy, (2) up-to-date-ness, and (3) availability of original works, reprints, and translations of reference books and textbooks in the 14 scheduled Indian languages, and not only books dealing with librarianship, of course.

Classification and Cataloging vs Variety

Another striking feature of the curriculum of an Indian library school - to an outsider - is its unparalled emphasis on classification and cataloging which together use up 4 of the required 8 papers in the B.Lib.Sc. programs (and the M.Lib.Sc. programs as well, where they are offered) in most of the schools, and which together also cut down on the possible variety of papers that might be offered.

(In American library schools classification and cataloging are treated together in each of two one-semester course - i.e., papers - usually called simply "basic" and "advanced" with often only the basic course being required of the student depending on the kind of library he expects to work in. Classification and cataloging together thus use up at most only two out of the 12 to 15 courses required in the usual library school curriculum. I should add that more advanced, more intensive, study of classification and cataloging is also possible in a number of schools where suitable courses and seminars are available as electives).

The primary reason for this emphasis on classification and cataloging in Indian library schools is, without question in my mind, the necessity for each Indian library to be completely self-sufficient in the technical processing of library materials since there are no national or other centralized aids in India to help a library in its technical processing (as there are in the United States) - no printed unit cards, for example, no up-to-date current, classified, truly comprehensive list of works published, no "shared cataloging" arrangements, no national union catalog - even for Indian publications let alone foreign, and in most libraries (especially university, college, and special) foreign publications outnumber Indian publications.

Another related reason certainly is the wide-spread use of the Colon Classification in Indian libraries making it troublesome to use whatever foreign aids may be available and making it necessary for each library to do original classification and cataloging on all foreign publications as well as on Indian. So students must be especially well-grounded in Colon Classification. But they must also be well acquainted with the Dewey and the Universal Decimal Classification systems since these, too, are in use in India, and any library school graduate may be called upon to take over an old library or to set up a new one, often as the first - or only - professionally trained person to be in charge.

No doubt some (or all) of the reasons for the amount of time spent on each paper, mentioned above, are valid for the classification and cataloging papers, too, and possibly with even greater justification: both classification and cataloging definitely require attention to detail; both classification and cataloging surely are the least known by most people among all topics or concepts in librarianship; and both classification and cataloging in Colon may well demand of their teachers more careful and solid practical experience as well as more thorough and precise knowledge of principles than other topics do. But no doubt, too, the effects on the students, also mentioned above, are also the same: the good ones get bored, and all suffer from the lack of variety in their library education diet.

Tradition vs. Variety and Service

Even more glaring to an outsider looking at the curriculum of an Indian library school is the absence of papers laying any stress on those aspects of librarianship which are at the very heart of the profession today: (1) reader services, (2) building library collections, (3) subject reference materials, (4) management, (5) research, (6) communication media, (7) information science (theory, mechanized practice), (8) documentation, (9) indexing and abstracting, (10) work with particular groups (e.g., children, young people, adults, villagers), and (11) collection and use of specialized materials (e.g., audio-visual materials, government documents).

(In a number of the accredited library schools in the United States and Canada the first four of these are covered in separate required courses and in most of the other schools all of these are covered in separate electives. I know that many, if not all, of these topics are dealt with to some degree in one paper or another in an Indian library. school curriculum, but I know of none that is especially stressed even to the extent of being the main part of any paper regularly being offered).

One explanation, I am told, is that many of these, and other, topics have been considered from time to time as possible library school papers, but that (1) there has been very little demand for most of them, (2) there is very little need for some of them given the present state of librarianship in India, and, in any case, (3) there is a dearth of persons qualified to teach many of them. Besides, certain of these topics are already being offered in the courses available at INSDOC (New Delhi) and at the Documentation Research and Training Centre (Bangalore) or are optional papers in one or another of the library schools.

These reasons are all too valid. But one more (so far, tacit) reason has to be taken into account: within the present rigid library school program there is no room for any more papers unless the program is lengthened or unless one or more of the existing papers are dropped, either of which eventuality seems currently unthinkable.

I wonder, though, if the pattern of Indian experience already mentioned and the pattern of Indian custom may not have a good bit to do with the apparent neglect of, especially, the public service aspects of librarianship in the standard library school curriculum. Traditionally, according to both Indian and foreign writers and observers, educated Indians have favoured intellectual pursuits rather than service-oriented ones, and this inclination toward mental instead of physical work coupled with the also traditional individuated rather than social outlook of most people in India has simply unconsciously strengthened the more technical (i.e., intellectualized) aspects of librarianship (hence, in India, library "science") at the expense of the service aspects. Furthermore, in order that library education could be considered worthy of university sponsorship (particularly at the post-graduate level) its curriculum had to be as intellectual as possible in its own right, so the technical aspects of librarianship were emphasized, this time consciously, but again at the expense of the service aspects.

As a matter of fact, American library schools for many years have had to justify their graduate-level programs to many a sceptical scholar in some of the more precisely defined "substantive" disciplines, and they have not always succeeded. Even among American librarians and library educator today, there is considerable disagreement about the amount and the level of the intellectual content of many library school courses, and this disagreement has been intensified with the establishment of Ph.D. programs in some of the schools.

It should be noted, in passing, that in the United States the public service aspect of librarianship has always been taken for granted as the principal, indeed the only, justification for a library of any kind. Undoubtedly, the fact that American librarianship has been from its very beginnings a popular, practical development, rather than an official or an idealistic one, has had a lot to do with its public service point of view. Library education naturally has reflected this well-established concept even when the library schools physically moved out of the workaday world of public libraries into the intellectual world of post-graduate universities. Library research in the United States has also reflected this service emphasis: effective, efficient, individualized service is its goal.

In more recent years the tremendous increase in the amount of library-destined material, in its interdisciplinary nature, in its subject depth, in its subject breadth, in its internationality, in its variety, and in its use, has put pressure on libraries and, in turn, on library schools all over the world to cope with it. The concept of effective service to users, the very bedrock of librarianship, has become even more important in libraries and other information centers because of this pressure, and increasing attention is being paid by library administrators in many countries to the library needs and the library habits of the regular, irregular, and potential users of all kinds of libraries. So library service simply can not be ignored or slurred over by library schools anywhere in the world; rather, it must be emphasized and improved upon.

Unfortunately, this same pressure also demands that other professional and intellectual competencies in librarians must also be improved upon, either before, during, or after their formal professional library education. In the United States this strengthening, this buttressing, of librarians is being undertaken at three levels: (1) at the regular fifth-year M.L.S. level, (2) at a new sixth-year specialization certificate level, and (3) at the regular Ph.D. level, normally 3 years beyond the master's.

Not surprisingly, in order to put more meat into their M.L.S. programs some schools have found it necessary to take out the more elementary courses and to admit as M.L.S. students only those who already have credit for the basic core courses obtained in an undergraduate program, in an intensive-study program (e.g., during the previous summer), or possibly by passing exemption examinations prior to matriculating. But the fifth-year M.L.S. programs are still considered to be general programs, "wherein lies the unity of the profession," as Dr. R.C. Swank recently put it [5]. The sixth-year certificate programs are usually tailored to the specialization needs of individual students, so they are gradually becoming the specialized programs, "wherein lies the diversity of the profession". The Ph.D. programs are, of course, highly individualized and prepare experienced librarians largely for academic (college, university) library administration and for teaching.

In India this pressure to cope with more sophisticated materials and to improve both library service and librarian competency may not yet be so great. But it is definitely noticeable: witness the list of librarian-identified shortcomings of Indian library education given earlier, most of which touch on these very points. So it does seem students in Indian library schools are being at least undernourished if not actually cheated, not only by the limited variety and content of their prescribed fare but also by the apparent neglect of each syllabus to focus on its contribution to the overall purpose of librarianship: library service.

One can believe that American libraries exist primarily to serve their users. One can also be led to believe (just by looking at the curriculum of an Indian library school) that Indian libraries exist primarily to give Indian librarians something to administer, or to classify and catalog.

Course Comparison

A comparison of the amount of truly substantive material covered in similar courses (i.e., papers) in American and in any other country's library schools may be quite difficult for anyone to make for a number of reasons: (1) students in the two countries have very different educational backgrounds, learning patterns, and library-use experience; (2) libraries to be used as working models in the two countries differ greatly in size, in scope, in service; (3) library resources for examination and study in the two countries differ greatly in availability, in up-to-dateness, in internationality; (4) teaching methods differ; (5) emphases differ; (6) needs differ; (7) examinations and other methods of student evaluation differ; and so on. For any one of these reasons it would not be possible for a library school teacher to follow exactly the same syllabus in both countries, nor would it, for that matter, be proper. (From personal experience, I can say that it is not easy to use the same syllabus in different schools even in the United States!)

And it would also be very difficult for a library school student to compare the substantive content of similar courses (i.e., papers) in both countries.

But not even the international education experts have settled all questions of equivalencies between presumably similar curricula in different countries, so mere teachers and students should not worry overmuch about the difficulties of comparing library education programs in various countries.

The Current Curriculum

Taking all the factors into account, it is presumptuous of an outsider to question either the emphasis on classification and cataloging or the amount of time spent on individual papers in any Indian library school curriculum, although he surely would question sharply the curriculum's lack of coverage of current pivotal topics in librarianship. Nor can an outsider readily evaluate the substantive content of any of the papers as they now are taught without first knowing what the needs of Indian librarianship are and without actually sitting in on the presentation of the papers; but this procedure is time-consuming and it relies on what is likely to be an artificial classroom situation because of the presence of the outside observer, so it is not completely satisfactory.

The best he can do by himself is examine each syllabus, note its coverage, bibliography, and timing, take into consideration what he has been able to learn about the requirements of domestic libraries, and trust that what is supposed to be taught actually is; but this "best" quite clearly is really not very good, either.

I cannot help but wonder, though, about the complete separation of cataloging from classification and the complete separation of practice from theory in each of these topics in the usual Indian library school curricula for both the B. Lib. Sc. and the M. Lib. Sc. courses. It seems to me that this double extraction has, in essence, isolated the book classifier from the book user as effectively as if they were on two different planets.

If there are any basic library activities that must be user-oriented, those activities, I believe, are classification and cataloging. Without user-consideration, classification becomes the intellectual sport of classifiers, pursued for its own sake; and cataloging becomes the technical ritual of catalogers, a professional rite performed by code. There is some evidence in some libraries that this is already happening, with the result that users and librarians are becoming ever more estranged.

In actual library practice, of course, the classification and the cataloging of a book are done at one sitting, by the same person, in one continual process, and, I suspect, with precious little attention to theory. Why, then, should library schools teach classification and cataloging in so many fragmented parts? Why do they draw and quarter that which some say is the very soul-and-body of professional librarianship?

I also, quite frankly, wonder about the amount of time that seems to be needed to teach Indian students the fundamentals of cataloging (and of classification, too, for that matter, but at the moment I'm more concerned about cataloging). Surely, neither the materials to be cataloged nor the principles of cataloging and the cataloging rules that are applied in India are any more complicated than those met with in, for example, the United States. (The already-noted general availability in the United States of printed catalog cards and other processing aids for most books that a library is likely to require has not eliminated the need for catalogers in most libraries, according to an Indian librarian recently returned from a visit to America; rather, in some instances, the need for catalogers is greater, to adapt or to correct the printed cards to conform to local usage).

It is true that printed catalog cards certainly have eased the pressure on catalog departments of many American libraries. They have reduced drastically the amount of catalog card preparation required, and they have standardized the appearance, the arrangement, the informative quality, the acceptance, and the use of card catalogs in libraries all over the country. But they have not eliminated catalogers or the training of catalogers in library schools. In addition to the cataloging demands made by the local uniqueness of most library card catalogs, there is also an irreducible minimum (as well as an undefinable maximum) number of items that every library, small or large, must do original cataloging on. (In very large libraries much of the processing work may be done by nonprofessionals, trained and supervised by professional catalogers). So, catalogers will always be in demand, often at a premium judging from the help-wanted columns of library periodicals.

If the materials, the principles of cataloging, and the cataloging rules are, indeed, similar, why, then, should be basic training of Indian catalogers take 120 hours while the basic training of American catalogers takes 45? Why should advanced training of Indian catalogers take an additional 120 hours while the advanced training of American catalogers take 45?

I do believe that experienced Indian librarians and library educators need to take a hard look at the four classification and cataloging papers in the B. Lib. Sc. course and at the four classification and cataloging papers in the M. Lib. Sc. course to find out whether or not any of these papers can be combined, shortened, made optional, or even eliminated, in the light of demands made on catalogers in Indian libraries and in the light of identified shortcomings of Indian library education in so many other important areas of librarianship. And lengthening the program another year is not a suitable solution...

This may be the place to comment about the annual-or-terminal-examination-dominated system of education prevalent in India with its very detached external examiners, its stress and dependance on remembered facts and precise wordings, and its remarkable low pass standards. Since jobs are scarce and since only the best students (i.e., those with the highest marks in the year-or-course-end examinations) stand a chance of even applying for jobs (let alone getting them), all student effort and study during the year is directed only toward passing the examinations rather than toward getting a well-rounded liberal education.

Similarly, only the top post-graduate students are ever considered for seats in graduate or professional schools, with the result that students admitted to library schools, for example, may indeed have high marks in their previous courses but yet not have the well-rounded liberal education and personality so essential to becoming a good librarian. Grades alone are not enough to ensure the quality of library school graduates.

My reference throughout this paper to practices in American library schools does not mean that I necessarily consider it to be the most suitable practice to be followed everywhere - or anywhere - else. It is simply the practice I know best.

But two observations about it are pertinent anywhere and everywhere else: (1) American library education has been developed primarily to serve the needs of American librarianship; and (2) American library education is constantly being discussed, examined, and evaluated by practicing librarians and revised to meet the changing needs of the profession. Similarly, library education in any country primarily must serve the local, and changing, needs of the library profession in that country.

One other point occurs to me: If the principles and practices of American librarianship and the concept of continuing evaluation and revision of library education to meet the changing needs of the library profession are considered by others to be worth emulating, or at least thinking seriously about, then the practices in American library schools are also worth at least thinking about with a view toward adapting (if not adopting) that which can be most useful locally, including ideas about the curriculum.

Library School Program Evaluation

India very much needs an assessment of its library school programs. Other countries have both formal and informal arrangements for continuing evaluation of their programs, but India has none.

Within the past few years, it is true, there have been seminars, conferences, whole issues of journals, reports, and numerous articles devoted to the question of library education in India with most attention being given to the curriculum (at both B. Lib. Sc. and M. Lib. Sc. levels) and particularly to whether or not it includes what the individual authors of the papers think it ought to. In many cases the history of library education in India has served to introduce the topic, but each author always manages to get around to the one or two subject papers the considers essential to the education of Indian librarians and that must be included in the curriculum of each library school in the country.

At least one report (the 1965 U.G.C. report mentioned earlier) and one seminar (the 1966 seminar sponsored by the University of Delhi) recommended that the curricula include more subjects and a wider variety of optional papers, and they made other suggestions with regard to teachers, students, internal assessment of papers, scheduling, and so on. So far the recommendations and the suggestions have had little effect.

India has no procedure for the professional certification of libraries, librarians, or library schools, nor any nationally accepted standards in the library field although both certification (or accreditation) of library schools and the creation of library standards have been proposed by individual librarians from time to time and a number of excellent bibliographic and documentation standards have been in effect for many years. Under these circumstances, it seems to me, a reliable, valid, and conclusive evaluation of the nation-wide library school program in India can be made only by the users of its products, the experienced library administrators who hire library school graduates, and by the graduates themselves once they have had experience in a professional position in a library.

The only criterion need be, how well do the graduates perform on the job. Each individual library school, of course, may also be examined quite closely after the fashion of an A. L. A. accreditation survey which looks at student body, teacher qualifications, physical facilities, curriculum, library, and so on, but more with a view toward identifying probable reasons for the on-the-job performance rating of its students. In themselves these factors can only indicate the potential rather than the real worth of the school's program.

(In a related way, the test of a library is simply how well does it serve the needs of its patrons. Its size, its physical facilities, and even the qualifications of its professional staff, for example, are only contributory to the total effect and, while interesting as such, they can not in themselves measure the worth of a library).

Such performance evaluation, however, is neither simple nor easy. For one thing, it presupposes that all library jobs are well defined, described, and rated and that those holding jobs know their duties, their responsibilities, and their rights. For another, it presupposes that all library administrators have settled on well-defined, clearly-described, and impartially-rated standards of performance for all the jobs in their libraries and that they can and do apply them; and further, that all library administrators know their users' needs and know how best to serve them.

For still another, such performance evaluation presupposes that all library schools are well aware of the state of the local library profession and know what library administrators expect from their library staffs to best serve the needs of their users, and particularly that all library schools have constructed their programs to satisfy as well as to anticipate the needs of the profession and the expectations of the administrators.

No, performance evaluation is neither simple nor easy.

One major difficulty, perhaps, in evaluating library education here in India is the lack of nationally-accepted standards by which it can be measured. One major difficulty, perhaps, in setting up standards here in India is the lack of nationally-accumulated data covering the entire library profession on which standards can be based. One major difficulty, perhaps, in collecting data on library work here in India is the lack of organized procedure to collect data. And one major difficulty, perhaps, in organizing a procedure to collect nation-wide data on library work here in India is the lack of awareness on the part of librarians of the value to the profession of having up-to-date data on libraries, librarians, librarianship, and library education in India.

It is not within the scope of this review of library education in India to suggest why's and ways of collecting such basic nation-wide data on a continuing systematic basis. However, a few agencies do come to mind which seem to me to have some responsibility to gather such data: Indian Library Association, Iaslic, GOI Libraries Association, UGC, and, possibly, Indian Academic Libraries Association. Or perhaps the Indian Standards Institution (ISI) can do the job. Its Documentation Committee (EC-2) has been one of the most active groups within the Indian library profession ever since it was formed in 1947 and it might well expand its activities to include gathering the necessary data from which library performance standards can be developed.

In this paper I can do no more than urge Indian librarians to do something about developing nationally-agreed-upon standards, not only for the performance of professional (an non-professional) work in libraries, but also for the evaluation and development of libraries of various kinds (school, college, university, public, special) covering their collections, staffs, facilities, services, and financial support. Standards for library schools can then be developed, too, covering teachers, students, curriculum, facilities, teaching materials, and financial support. Again, perhaps ISI's EC-2 can do the job.

One way to begin, would be for each library in India to develop (1) a staff manual covering policy, program, procedures, and personnel; and (2) a career and salary plan covering job description (employee qualifications, duties, responsibilities), organization structure, promotion, and staff benefits.

Each one of these projects will take much time and great effort on the part of many Indian librarians. More, each one will require patience, persuasion, fortitude, dedication, and, above all, a truly professional, non-partisan turn of mind.

But unless and until the library schools of India develop a clear understanding of the present state of Indian librarianship, of the direction in which it is moving, and of its present and continually changing needs, there will be little purpose in even talking about evaluating, let alone improving, Indian library education which is so inseparably bound with Indian librarianship.

Library school teachers must become fully informed about Indian librarianship. They must go into the field to find out what actually is the state of the library profession in India. They must learn at first hand what really are the programs and the problems and the prospects of Indian libraries. They must verify in person what in fact are the accomplishments and the needs and the hopes of Indian librarians. They must, in short, become truly involved in Indian librarianship, take part in its work and in its development, and anticipate its growth and its progress. Only then will they be able to develop a dynamic library school program that will indeed serve the needs of the library profession in all of India.

More than that, of course, library school teachers must also do something about putting library school programs in shape. But this, I suspect, will take time – and professional pressure.

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Mrs. Malati M. Kanbur has more than ordinary interest in education for librarianship, as she is a teacher in library science in one of our important library science schools, viz., the Department of Library Science of the Delhi University. She obtained her Master's degree in library science from this university and subsequently became a teacher where she was taught. Mrs. Kanbur mainly teaches Classification. This is quite significant, as in this Department a few of the luminaries of our profession have taught this subject and a fine tradition has been built up. It is her challenging job to live up to that tradition.

As a sequel to the deliberations of the Seminar on Teaching Library Science in 1966, where Mrs. Kanbur was an active participant, she undertook to survey and examine 'education for librarianship' from the point of view of the students and present the findings before the profession. The present report is the outcome of Mrs. Kanbur's work in that direction. The author's very modest claim is that she has attempted to measure what is already known. At the same time she cautions that the problem of validity must be separated from the problem of reliability.

We are extremely sorry that the full report of the survey could not be accommodated here, however, efforts have been made to highlight the main findings.

EDUCATION FOR LIBRARIANSHIP IN INDIAN UNIVERSITIES WITH SPECIAL REFERENCE TO PATTERN OF ENTRANTS — SURVEY REPORT

Malati M. Kanbur

The 'Seminar on Teaching of Library Science' held in Delhi from 2nd to 4th September, 1966, was critical about the existing training courses in Library Science. This raised the questions, 'Is it so?' and 'Why is it so?' in the minds of those who have just entered the profession. The Seminar also discussed the Report of the University Grants Commission's Review Committee [1], which had stressed the need to assess the value of the training programme offered by the universities and some of its recommendations suggested undertaking a survey to study the 'Graduates Approach to Librarianship as a Career'.

In fact, the problems regarding Education for Librarianship have to be seen in the contexts of Consumer (Profession), Producer (The Schools) and Product (Students). The present study is an attempt to examine the education for librarianship from the point of view of the students (still in the process).

THE PRESENT SURVEY

The data collected for this survey refer to the students who enrolled during the 1966-67 academic year in 24 universities. The Indian National Scientific Documentation Centre (INSDOC) and the Documentation Research and Training Centre (DRTC) were also included in the survey. Information was collected through questionnaire which naturally imposed its own restrictions on the type and modes of questions and also on the data to be collected. The overall response was 60%. In all 355 completed forms were received.

It was decided to collect information from the students on (i) academic background, (ii) extra-curricular activities, (iii) their opinions of the course, and (iv) expectations regarding their future plan.

GROWTH OF LIBRARY SCHOOLS IN INDIA

There are 26 universities in India where library science courses are conducted. The number of universities has almost trebled from 1947 to 1967, while the number of library science departments in the universities has increased by four times during the same period. In 1957, when there were 15 library science departments in the universities, the Library Advisory Committee thought that the quality of the departments was more important than the quantity of the departments [2]. The Library Committee of the University Grants Commission again mentioned in 1959 that the immediate effect of the increase, in the number of library science departments, had been a great divergence in standard. Again, the Review Committee felt that proper thought should be given before a new library science department was set up. It is surprising to see that in spite of the three major committees' recommendations not to increase the number of departments, the period 1959 to 1967 has witnessed almost the doubling of the departments.

The Library Committee recommended that two first grade departments and six second grade departments distributed on a regional basis were needed. But the distribution of library science departments on a regional basis seems to have been ignored. Table 1 shows the number of universities and library science departments in the various States of India. It can be seen that there are no library science departments in the universities located in the States of Bihar, Jammu and Kashmir, Haryana, and Orissa. The maximum concen-

Table 1

State-wise Distribution of Library Science Departments in Indian Universities

	State	No. and name of univ. with lib. sci. departments		Year of foundation of the lib. sci. departments
1.	Assam	1	(Gauhati)	1966
2.	Andhra Pradesh	2	(Andhra,	1935
			Osmania)	1959
3.	Bihar		--	--
4.	Gujarat	2	(Gujarat,	1963
			Baroda)	1956
5.	Haryana		--	--
6.	Jammu & Kashmir		--	--
7.	Kerala	1	(Kerala)	1961
8.	Madhya Pradesh	3	(Vikram,	1957
			Sagar,	1962
			Jiwaji)	1964
9.	Madras	1	(Madras)	1937
10.	Maharashtra	5	(Bombay,	1944
			Nagpur,	1956
			Poona,	1956
			SNDT,	1963
			Shivaji)	1964
11.	Mysore	2	(Karnatak,	1963
			Mysore)	1965
12.	Orissa		--	--
13.	Rajasthan	1	(Rajasthan)	1961
14.	Uttar Pradesh	4	(Banaras,	1942
			Aligarh,	1958
			Lucknow	1962
			Kashi Vidyapeeth)	1967(?)
15.	West Bengal	4	(Calcutta,	1946
			Jadavpur,	1963
			Burdwan	1964
			Kalyani)	
16.	Delhi	1	(Delhi)	1947
17.	Chandigarh	1	(Punjab)	1960

tration, with 5 departments, is in the Maharashtra State, while the States of Assam, Kerala, Madras and Punjab have one department each. The total number of students enrolled in the 26 universities in 1966-67 was 745. The maximum number (83) was in Calcutta and the minimum number (8) in Lucknow. The number of students enrolled by the Departments, the Manpower stock, and the annual rate of growth are shown in Tables 2, 3, and 4.

Table 2

Number of Students in the Departments of Library Science in India for 1966-67 Session: University wise

Sl. No.	Name of the University	No. of Students
1	Aligarh	33
2	Andhra	29
3	Banaras	38
4	Baroda	15
5	Bombay	44
6	Burdwan	28
7	Calcutta	83
8	Delhi	29
9	Gauhati	21
10	Gujarat	20
11	Jadavpur	25
12	Jiwaji	25
13	Karnatak	32
14	Kerala	25
15	Lucknow	8
16	Madras	19
17	Mysore	20
18	Nagpur	25
19	Osmania	40
20	Poona	25
21	Punjab	25
22	Rajasthan	31
23	Sagar	25
24	Shivaji	20
25	SNDT	25
26	Vikram	35
	Total	745

Source: i) Present survey
ii) Herald Lib.Sc.5; 1966 p.308-311
iii) Review Committee report
iv) Median from i), ii) and iii)

All amendments from the Departments are most welcome.

Table 3

Educated Manpower Stock: B.Lib.Sc. & Dip.Lib.Sc.: 1968. (Approximate)

Sl. No.	Name of Universities	No. of Students	produced
1	Aligarh	300	4.6%
2	Andhra	560	8.5%
3	Banaras	520	7.9%
4	Baroda	150	2.3%
5	Bombay	566	8.6%
6	Burdwan	90	1.4%
7	Calcutta	1170	17.6%
8	Delhi	530	8.0%
9	Gauhati	40	0.6%
10	Jadavpur	120	1.8%
11	Jiwaji	100	1.5%
12	Karnatak	130	2.0%
13	Kerala	170	2.6%
14	Lucknow	52	0.8%
15	Madras	300	4.6%
16	Mysore	60	0.9%
17	Nagpur	250	3.8%
18	Osmania	100	1.5%
19	Poona	300	4.6%
20	Punjab	202	3.1%
21	Rajasthan	300	4.6%
22	Sagar	70	1.1%
23	Shivaji	80	1.2%
24	SNDT	100	1.5%
25	Vikram	300	4.6%
	Total	6560	

Source: i) Present survey
ii) Herald Lib.Sc. 5; 1966. p.308-311
iii) Calculations from median intake of the departments.

Amendments from the Departments are most welcome.

ENTRANTS - PATTERN

34.8 % or 1/3 of the population is represented by women candidates. This figure might have been higher with the inclusion of the SNDT figures which were not included as forms were not received. The number of women students varies from department to department with the lowest in Vikram, Banaras and Jaipur with 13, 15 and 19 % respectively,

Table 4

Growth of Educated Manpower Stock since 1937: B.Lib.Sc. Dip.Lib.Sc. (Approximate)

Year	No. of B.Lib.Sc. and Dip.Lib.Sc.
1940	30
1941-45	70
1946-50	120
1951-55	260
1956-60	980
1961-65	2300
1966-70	4000
Total	7760
Annual rate of Growth	9 per cent

Source: i) Present survey
ii) Herald Lib.Sc. 5; 1966. p.308-311

and the highest in Kerala, Gujarat, Poona and Calcutta with 69, 60, 59 and 50 % respectively, to their total enrolment. The trend of women students entering the Library Science course is on the increase as the enrolment of women students in the higher education is also generally on the increase. The figures for women students to the total enrolment in Indian universities were about 13% in 1955-56, about 17% in 1960-61 and about 21% in 1965-66. Thus, in one decade the proportion has increased from 13 to 21 %. The Education Commission (1964-66) feels that the proportion of women to the total enrolment should be increased to 33% during the next ten years to meet the requirements for educated women in different fields. This would naturally mean an increase in the number of women students taking library science courses in the future. Within a decade the number of women students joining the Library Science courses may constitute more than 50% of the whole.

Whether the library profession is already facing or going to face the problem of 'social wastage of women' by marriage or other reasons may, perhaps, be investigated. It may be pointed out that one of the interesting findings of the 'Survey of University Education and Employment' [3] was that parents-in-law were largely in favour of their daughters-in-law working for remuneration. The present author's personal opinion is that married women still continue with their career because of the family and social set up of Indian society.

Average age of the student at the time of joining the course

The average age of the students comes to 26, with 27 for men and 24 for women. If we consider average of students of individual departments, then the higest (29) is in Calcutta and Gauhati, and the lowest (22) is in Lucknow. The maximum age is 51 for men and 41 for women with the average of maximum at 38. The minimum age is 19 for both men and women with the average minimum at 21.

Whether there should be an age limit for admission to Library Science courses is a question often discussed and there are varied opinions. One of the extreme views regarding the age limit for admission is that at 30 the students are mature and know what profession suits them and their entrance to the course in fact strengthens the profession. It is observed that 14.3 % of the students are between 30 to 40 years and only 2.6% are above 40 years, which amounts to 17% of the students being above 30 years.

It can be said that, in the long run, when professional qualifications as a minimum requirement for recruitment to professional posts becomes a rule rather than an exception, it will automatically bring down the percentage of students taking the course at the age of 30 or above. The trend of more fresh students joining the course will also result in bringing down this percentage.

Duration of break between academic course and professional course

30% of the population are freshers, i.e., those who have joined the Library Science course immediately after their first or second university degree. 26% of the students joined the course within two years of their completion of the academic course, and 30.7 % joined after more than five years break. The reason for this varied duration of break is mainly employment. Table 5 (next page) shows the duration of break.

Inter-university movement

37% of the students have joined a university other than the university from which they

Table 5

Duration of break before joining the Library Science Course

Sl. No.	Name of University	Fresher	Less than two years	Two to five years	More than five years	Total
1	Aligarh	9	8	10	1	28
2	Andhra	4	4	4	1	13
3	Banaras	10	8	10	7	35
4	Burdwan	10	4	4	2	20
5	Calcutta	1	10	12	7	30
6	Delhi	13	8	6	2	29
7	Gauhati	2	2	4	4	12
8	Gujarat	7	2	5	3	17
9	Kerala	6	7	8	2	23
10	Lucknow	4	1	3	-	8
11	Mysore	3	3	6	2	14
12	Osmania	3	3	3	2	11
13	Poona	7	5	6	3	21
14	Rajasthan	11	6	8	6	31
15	Shivaji	3	8	6	2	19
16	Vikram	10	10	10	1	31
	Total	103	89	105	45	342
	Percentage	30.1	26.0	30.7	13.2	

took their degree. This tendency is highest in the Vikram, Jaipur, Banaras and Delhi universities. Half of the movement is inter-university within the States and half is inter-university-inter-State movement. It may be remembered that there are 70 universities in India and only 26 departments of library science. This ought to result in more inter-university movement, but we find that 70% of the students for the course are from the same university as that where they took their degree.

Qualifications - Knowledge of language

According to the pattern of the Indian education system all the students know their Mother tongue and English and most of them know Hindi as well. It is disappointing to see only 3% of the students (excluding Calcutta where the students study a foreign language in their course) know only one European language. This needs some attention both from the library schools and also the profession, as a working knowledge of one or more of the foreign languages in which scholarly literature is produced or currently acquired is essential for library personnel for the provision of good service to the readers.

The three alternative ways to encourage learning of foreign languages could be i) encouragement from employers to study the language, ii) to include the language in the course, iii) to give preference to the students with language qualifications at the time of admission. The first alternative is beyond the scope of this paper. The second alternative is ruled out in the light of the Review Committee recommendation not to include non-professional subjects at the cost of lowering the standard of professional content of the course. Hence, the third alternative is worth considering.

Academic Qualifications

The importance of a good academic background for the library professional personnel is easily accepted. The data from the present survey reveal that 31.2% of the students have done their Master's Degree (M.A. or M.Sc.). The most disturbing factor is the small percentage of science graduates taking library science courses. Only 15.4% and 1.2% of the total population are B.Sc. and M.Sc. respectively, bringing the total of science students entering the course to 16.6%. In spite of science graduates being given preference in

Table 6

Distribution of Students according to Educational Status

Sl. No.	Name of University	B. A.	M. A.	B. Sc.	M. Sc.	Total
1	Aligarh	12	16	-	-	28
2	Andhra	7	-	6	-	13
3	Banaras	11	19	4	1	35
4	Burdwan	16	2	2	-	20
5	Calcutta	20	8	2	-	30
6	Delhi	6	16	4	3	29
7	Gauhati	10	1	1	-	12
8	Gujarat	14	2	1	-	17
9	Kerala	6	3	14	-	23
10	Lucknow	6	1	1	-	8
11	Mysore	3	5	6	-	14
12	Osmania	5	1	5	-	11
13	Poona	16	3	2	-	21
14	Rajasthan	21	8	2	-	31
15	Shivaji	14	3	2	-	19
16	Vikram	15	15	1	-	31
	Total	182	103	53	4	342
	Percentage	53.4	30.0	15.4	1.2	100.0

Banaras, Bombay, Delhi, Punjab and a few other departments, the percentage of science graduates entering the course is far from satisfactory. (See Table 6).

The percentages of students with humanities and social science as their subjects in the degree course are 19.7 and 3.3 respectively. Contrary to the popular notion of more humanities graduates taking up the profession, the fact that 30.3% of the students are with social science backgrounds is quite encouraging. If a further analysis is made into subjectwise distribution of the students in social sciences, Economics comes at the top followed by Political Science, History, Geography, while the last to come in the list is Sociology. In the Humanities Group the background of the majority of the students is Literature, followed by Psychology and Philosophy.

33.2% of students are from Pass courses which has naturally decreased the number of students with Honours Courses. This raises the question of depth vs breadth of subject coverage needed for a librarian. Students with Honours degree are given preference because of the trend of better students opting for the Honours Course, but to what extent in the practical life this preference has an upper hand is yet to be investigated. The possibility of a graduate course with subjects biased towards a postgraduate professional course is also worth considering.

Academic quality of students

It is very difficult to draw any conclusions about the average intelligence of students from the percentage of marks gained in their degree examination results, as syllabus and marking varies from subject to subject and university to university. It is important that a few Departments which are using the interviewing method for further screening of the students, selected on the basis of marks obtained, should pass on the information regarding its pros and cons and suitable technique of questioning to other Departments, to help in the formulation of objective criteria for selection of candidates of the course.

In fact, the minimum qualification of First or Second Class, as recommended by the Reviewing Committee, does not give a standard measure as the minimum marks for First, Second and Third divisions vary from university to university. However, for the present study 50 to 59% marks has been taken as Second division and above 60% marks has been taken as First division. On this basis present situation is discouraging as only 32% of the students satisfy the admission requirements as prescribed by the Reviewing Committee, while 53% of the students do not satisfy this recommendation. An unusual point is that 1.46% of the students have not mentioned their marks in the forms. It is difficult to interpret their silence though one is tempted to group them as below Second division.

Of the 32% of students who had scored between 50 to 59, 70% are fresh students and 30% are students with working experience.

A question was included in the present survey to know the opinion of students who had to appear for the interview before getting admission. The questions asked at the time of the interview were invariably on (i) their interests in general reading; (ii) their subject of specialisation in the degree course; and (iii) their working experience, if they had library experience. In what way the replies of the students have helped for the selection and to what extent they have been justified, needs further investigation.

Working experience

For many years education for librarians tended to be regarded merely as a training for practical jobs or for a series of crafts but gradually Library Science evolved as an academic discipline with a body of principles that could be studied and applied to actual situations. This transformation has naturally raised the question, 'who should be taught'? — a person having enough library experience or a fresher from the college with good academic background. Here opinions differ among educators and administrators. The Library Committee pointed out that "... implication of the term professional is the need for putting the students through an apprentice course before formal teaching begins. Raw graduates without any experience of library work feel at sea in a course on Library Science. They should, therefore, have a purview of the daily routine and know-how of the library. It will obviate the necessity, as it obtains now, of devoting a good slice of all-too-short time to the familiarisation of the students even with the most mechanical and elementary know-how. This diversion prevents teaching from being taken to a higher level, worth of a post-graduate course" [4]. The Review Committee agrees on this point and recommends that library schools should admit students provisionally some months in advance and insist on their taking apprentice courses under the schools' guidance for about six months in an approved library.

On final analysis, practical training in the course for librarianship can be divided as, (i) pre-course training, (ii) on the course training and (iii) post-course training. The problems connected with (ii) and (iii) will be discussed later. Regarding the first point, again, three alternatives are possible, viz. (i) working experience in any library, (ii) working experience in a particular or standard library and (iii) library school planned apprentice course. If we take the first alternative, few would deny the importance of such practical experience, but equally it is recognised that all depends on the library in which the experience is gained. So, if the experience is to be restricted to well organised libraries (i.e. coming to the second alternative) it means restricting admissions to a few who are working in the recognised libraries. This will also mean that the schools, in a way, will be respondible for allowing the less organised libraries to continue on the same pattern. The third point is well recognised as the best means to the practical training, as a term spent in a properly conducted systematic training scheme is worth any amount of time spent in a library where the trainee is regarded as a cheap non-professional labour. But, there are some practical difficulties in implementing this scheme. Moreover, the problem of comparing the experiences of those students who are already having a working experience either in libraries or in other institutions with those undergoing apprenticeship will still be there.

It is suggested that each school should investigate the performance of students recruited directly from the university, students with library experience and students with other types of experience during the course and after the course in the employment. This case study method will definitely help to solve many of the often voiced doubts and assumptions.

Experience of the students

55% of the students have working experience before they join the course, 2/3rd of whom have professional experience, i.e., working experience in a library, and 1/3rd have working experience in other fields like teaching and administration. Amongst the experienced group there are more students with college library experience. It seems that the college library system is in the process of helping its staff to gain professional education. The small number of students with special library experience may be either due to the preference of such libraries to employ subject specialists or such students prefering to join the special courses of DRTC or INSDOC. The data show that out of the 13 students enrolled on Insdoc course, 10 are from special libraries.

Competitive and proficiency tests

The traditional method of assessing the intelligence of a student is to watch his performance in competitive examination like IAS, PSC or entrance examination of professional institutes. It has almost become an accepted fact that only top ones appear and the selected are the best of the lot. If this is taken as a criterion, then the result of the present survey is very disappointing as only 10% have appeared for such an examination and their performance in the examination in the majority of the cases was unsuccessful.

However, 36% of the students have appeared for tests like Hindi, Sanskrit and language test, or General Knowledge test, and in few cases typing test. Here 90% of the students were successful.

Other activities of the students - Games etc.

It is observed that only 9% of the students are not interested in games. In outdoor games Cricket gets the first preference followed by Hockey and in indoor games the first preference is Chess followed by Cards.

Only 24.3% of the students have hobbies. Photography bags the highest number of first preferences followed by stamp collection. Knitting and Sewing as usual get the scores exclusively from women candidates.

Cultural activities are important in respect of public relations in library work but the percentage of students interested in cultural activities is smaller than those interested in games and hobbies.

Association membership

30% of the students are members of professional associations and the majority of them are members of a library association. The highest number of students who are members of a library association is in Calcutta and Jaipur where most of the students are candidates deputed from various libraries.

15% of the students are members of literary associations like Drama and Music Associations. 32% are members of civic associations like NCC and Scouts. On the whole 72% of the students are members of one or the other association.

Reading habits

In this survey we find that students do read general books (more than 82%), contrary to the general belief that they do not use their spare time for reading other than their textbooks. One prominent point is that many of the students are interested in topical books like the 'Untold Story', 'India Wins Freedom', 'Profiles in Courage', 'Meeting of East and West', 'Krishna Menon', and a few other titles which are repeatedly mentioned. So far as reading tastes are concerned the classification of the students according to subject interest expressed as percentages is as follows: Travel and History 30, Novels 30, Essays 5, Poetry 5, Drama 5 (Literature 45), Religion 15, Other 10.

As far as novels are concerned, detective and mystery appear to be less popular (good sign), whereas a few novelists namely Premchand, Tagore, Shakespeare, Dickens and a few novelists in the regional languages are favourites.

The names of 30 newspapers are mentioned with the 'Times of India' and the 'Indian Express' mentioned by more than 60% of the students. Others are mostly regional ones mentioned by the students of that region, like 'Andhra Patrica' by students from Andhra University and 'Amrita Bazar Patrika' by Burdwan and Calcutta university students.

The number of magazines mentioned is about 25 with 'Illustrated Weekly', 'Readers Digest', 'Shankars Weekly', 'Time' and 'Femina' (mostly by ladies), securing the maximum preference. Some of the magazines mentioned by the students are regional in mature like 'Desh' mentioned by students from Calcutta.

The majority of the students are found to be not in the habit of reading technical journals. 40% of the students have not replied. The reason for this silence may be confusion between the scope of 'magazine' and 'journals' which was not clearly explained in the Questionnaire.

Use of library before joining the course

It is heartening to see that 88% of the population thought, before joining the course, that library was a part of formal education, which shows the 'library conciousness' of the students.

It is satisfying to see that 95% of the students have made use of the library. 48% have used one library, 36% have used two libraries, and 8% have used three libraries. 29% use a university library regularly and 15% casually, 33% use a college library regularly and 20% casually, 11% use a public library regularly and 11% casually, and only 1% use a special library.

The greatest use of the library was for general reading, and next was for text books and periodicals, and last was for seminar and tutorial preparation.

77% of the students were familiar with the catalogue, 65% were familiar with a few reference books, 53% were familiar with shelf arrangement and 47% were familar with service rendered. However, the present population's familiarity of the library, before joining the course, cannot be generalised as these statements of the students may have been influenced by the knowledge they have gained during the course.

Interest in joining the Library Science Course

There appears to be a wrong belief prevalent in some quarters, even today, that persons not eligible for postgraduate training in other fields are good enough for training in Library Science. As far as information from this survey is considered, 15% did apply for other courses like B.Ed, M.Sc. and Ph.D. i.e., 55% of the fresh graduates who joined the course immediately after their degree were trying for other courses, but it was not clear from the answers as to whether they applied for the other courses as an alternative or applied for library science course as a last resort. It would be presumptuous to make the generalisation that they joined the library science course because they did not get admission in other courses.

Information regarding the course

Analysis of the question C1 (how did you come to know about the B. Lib. Sc. or its equivalent course) show that 19.3% of the students have come to know about the course while doing the course for the Certificate in Library Science, and 19% while working in the library. 17.5% have joined the course on the advice of a professional librarian.* Many of these students, advised by librarians, are their employees.

It is discouraging to see that not many students are helped by working librarians. Part of the librarians' criticism regarding the library education and courses of the library school, if directed towards helping good recruits as input to the course, will automatically improve the output of the schools.

5.5% of the students decided to join the course because of the impressive services rendered by libraries. A majority of the students in this group mention USIS and British Council libraries with university and college libraries coming next in the list.

18.4% of the students have joined a course on the advice of persons other than librarians, like Principals of colleges, Heads of Departments, Readers, etc.

The Vocational Guidance Centre is almost inactive in promoting the case of librarianship as a career. It is high time that proper pamphlets like 'Library Education Directory' (Office of Education, U.S.A.) and 'Students Handbook' (Library Association) be prepared and distributed.

It may be mentioned here that as many as 4432 applications were received by 15 schools for 450 seats with average of 10 applications per seat. 45% of the students selected fall within the range of 40 to 49% of marks which shows the quality of the rest of the applicants. Hence it needs wider and more attractive 'casting of the net' in search of quality students.

ENTRANTS - OPINION ABOUT THE COURSE

Pre-training Orientation Course

36% of the students had some sort of pre-training orientation course ranging from one lecture to a few lectures and a few hours of work in a library. 69% of those who attended such courses think that it helped them in following the lectures and gave them a clear picture of the library as an institution.

Library working experience during the course

Practical training during the course can be divided into, (i) Departmental library work, (ii) Host library work, and (iii) Field work or General library work. It goes without saying that practical programme is really helpful, but at times it centres round the routine work like pasting any binding. It appears that practical work in our schools varies from nil to no compulsion and limit.

Regarding the students' opinion on the library working experience during the course, 45% say that they have to work in the library and submit reports, 45% work in the library ranging from a week to six weeks during the vacation but need not necessarily have to submit reports of their work, 33% say that working in a library helped them to follow the lectures better and 10% say it supplements the lecture programme. Only 1% say that working in the library hinders their studies, which can be easily ignored. However, 65% of the students enjoy working in the library. This to a certain extent brightens the dim picture often created regarding co-operation between the library and the library school.

Sessional work

Many schools have planned some programmes whereby a part of the final assessment is made by the teacher. This is done by assessing the student from his day to day work, from his work assignments or from his monthly tests, or from his practical record. The Education Commission also opined that 1/3rd of the marks should be used for internal assessment.

The present survey shows that 70% of the students have to submit some kind of sessional work which is assessed and considered in the final examination. 60% of the students say that it has helped them from the final examination point of view, but the complaint from the students is that too many assignments are given and most of them are given in the third term which make difficult either to complete the assignment or to concentrate on studies. This results again in examination-biased essay writing rather than real involvement in the work.

General knowledge and Indian history

The Review Committee's recommendation is not to dilute the course either by Language or by General Knowledge papers. But a few schools still have either General Knowledge paper or Language or Indian History in their courses.

Half of the students who have these papers want them to be optional. 25% of the students not having these papers want lectures by subject experts on various topics.

Students' preferences to teaching methods

It is now accepted by almost all educationists that programmes of seminars, discussions, workshops and tutorials are spearheads of educational reform. The lecture method, although very often criticised, remains to be the best method, when logically planned, for continuous exposition, for correlating recent research, for awakening the critical attitude and stimulating the scholar's enthusiasm for the subjects.

The findings of the present survey show that 64% of the students feel that the lecture has an essential function to perform and it does release their energy and stimulates them to further studies on the subject. Students' attitudes for other teaching methods are as follows: 58% for practicals, 56% for discussion (though many of them have no separate discussion classes as such, but may mean the discussion during the lectures), 40% for tutorials and 30% for seminars. This low percentage for the tutorials and seminars as teaching methods may be that the students are not yet used to the idea of tutorials and seminars, or tutorials and seminars are not properly planned in the course, or they may be overburdened with the course work leaving them very little time to appreciate the importance of tutorials and seminars.

Students' work

The Education Commission recommends that contact hours should be 15 to 20 hours, supplemented by working on his own twice the contact hours, thus bringing the total work load to 45 to 60 hours.

The present survey shows that the total number of contact hours varies from 32 in Jaipur to 18 in Gauhati. The number of tutorials students have to attend varies from 3 per week, 3 per paper, two per month, one per week, 2 per week, to 30 in a year. The number of seminars to be participated in also varies from nil to one, one in a month and 15 in a year, but the majority of the departments have no seminar schemes. The number of assignments also varies but on an average it is about 5 to 6 in a year. The number of practice hours in a library varies from nil to six hours per week, 2 hours per day, 45 hours to 300 hours per year, to no compulsion and no limit. The number of reference books and bibliographies to be evaluated varies from 50 to 150 and 10 to 40 respectively. Book reviewing is almost nil, except in Osmania University where the number of books to be reviewed is 40 because of the paper on 'Ideas and Books'.

Students' study method and time spent on studies

28% of the students study by giving equal proportions of their reading time to each paper, 44% divide their time depending on the reading assignments, only 18% study randomly, for 5% it depends on their mood, and 5% have not replied.

The time the students devote to their studies naturally depends on their IQ, absorption capacity and the interest in the subject, but as already mentioned the Education Commission feels a minimum of two to three hours study for one contact hour is necessary, and if we take the Review Committee recommendation of 400 contact hours per year, it amounts to 800 to 1200 hours of students work. The replies from students to the question regarding the number of hours they spend on studies are as follows: 20% of the students spend less than 20 hours per week, 30% spend between 20 to 30 hours, 20% spend more than 30 hours per week, and 20% of the students have not mentioned the number of hours for studying, half of whom say they can never give a quantitative assessment of their study time.

The above timings approximately equals the Education Commission's recommendation of 20 to 30 hours of students own study, though the contact hours in different departments vary.

Interesting and difficult papers: Students' opinion

60% of the students find the Classification paper interesting, of whom 60% have given it as their first preference, 10% as second preference and 30% as third preference. Similarly, 48% of the population find the Cataloguing paper interesting, of whom 25% have given it as their first preference and 60% have given it as second preference and 15% have it as third preference. 44% of the student find Reference Service interesting, of whom 70% have given it as first preference and 30% as second preference.

This pattern of preferences may be due to the intellectual content or the stimulating nature of the subjects or it may be argued that because of these subjects' big share in the syllabus, the students' attitude is biased.

It may be argued that the interest or disinterest in a particular paper is all subjective, but it is surprising to see the cluster of students' interest or difficulty around a particular subject in a particular university. Thus, if we consider interesting papers, in Andhra 70% of the students have given their first preference to Organisation. In Delhi, 60% have given their first preference to Reference Service. In Jaipur 50% have given their first preference to Administration.

This centred interest, though difficult to generalise, may be interpreted as meaning either that the library facilities are much better or that the teaching is very interesting and stimulating in that particular department. This suggests that an evaluation of teaching from the students is worth trying.

The Classification Paper

Opinion regarding the importance of Classification in the curriculum varies. Some feel that classification and subject analysis represent the zenith of education for librarianship. While, at least a few in the age of computers feel like abolishing classification like poverty (though may introduce the concept through back door!). In the present survey 60% of the students feel that too much importance is given to Classification and 30% feel that Classification needs to be studied in detail. 60% of them want to study both Colon Classification Scheme and Decimal Classification Scheme. Contrary to the opinion of too much importance being given to Classification, it is surprising to see that 69% of the students want separate papers for Classification theory and practice. Regarding the examination system for classification practicals, 60% of them want 'periodical internal assessments'.

Examination system

'The single reform to bring the desired change in education system is examination system' says the Education Commission, 'set syllabus, external examination, cramming habits all have crippling effects'. One can say the problems are known, their significance is realised, broad lines of solution — at least to begin with — are known, but for some reason or the other full implementation has not yet been done.

The opinion of the majority of the students in the present survey is that the overall assessment including their practice hours in the library, tutorials, seminars and discussions, should be preferable to the "terror" of once for all final examinations.

Post Course Apprenticeship

A post course apprenticeship is one of approaches in an educational system where theory and practice can be blended to make a student more productive. It can be done either by awarding the student the degree after he completes the required period of apprenticeship or by making the required period of apprenticeship a pre-requisite to the jobs.

60% of the students want apprenticeship in a library, the majority of whom have suggested that the apprenticeship should be on the lines of 'medical internship' paid jobs. The rest, most of whom are working librarians, have not expressed their opinion on this point.

Membership of Library Association

A question was included to find out the students opinion regarding the membership of library association. 68% think compulsory registration of membership of library association should be enforced in order to qualify and practice as a professional librarian (as it prevails in Britain). Half of the rest of the students feel that no compulsion in membership should be enforced.

Use of the Library

From the data available from the Review Committee Report the departmental libraries seem to be far from satisfactory. But surprisingly enough 61% of the students say that they are satisfied with the library provision. This may indicate that either the selection of books is good, or reading is assigned to a few available books. However, 50% make use of the libraries other than their department or university library.

General Impression of the Course

A few students have summarised the whole profession's motto in a few phrases, like 'helps to serve the community', 'must for the personnel working in the library', 'enlarged their outlook', 'created interest in books', etc. One of the often mentioned points is that more practical work is needed including laboratory work in the department for classification and cataloguing. Similarly, the majority opinion is that the duration of the course vis-a-vis the syllabus is inadequate.

About the contents of papers, some of the remarks are: 'Classification and cataloguing should be simple and not to be crowded with too many facts not used in a small or medium sized library', 'evaluation of reference books be used for the assessment instead of final written paper', 'visits to press and special libraries for photo reproduction and films on paper making and other aspects be the essence of Physical Bibliography rather than reading a set book', etc.

Classroom lectures are widely criticised though a few are satisfied with the existing conditions. Some of the comments are: 'lectures often create the impression that the course is difficult', dictation of notes be avoided', 'lectures are of [illegible] dry', etc.

In addition to the opinion regarding the course, some students feel that syllabus should be revised, better students should be recruited, knowledge and love for books should be made the criteria for selection rather than academic qualifications, more scholarships or stipends should be given and examination should be completely abolished and grades on the year's work should be given.

Comments from the profession and the students come very close in respect of 'practice work', 'duration of the course' and 'syllabus of the course'. The problem of 'why this should be so when the Directors of most of the schools are practising librarians acting as link between the school and the profession' is yet to be investigated.

The Faculty

On the basis of what have been discussed so far, let us consider an ideal department with 'school guided pre-course and post-course apprentice course', 'library work during the course' with adequate discussion classes, seminars, tutorials, in addition to lectures. Assuming the strength of students to the B. Lib. Sc. course to be 30 and working weeks 36 in the year, the following calculations give the teachers' working load for the year.

	Nature of Work		Teaching Programme	Teaching Hours in a Week	Total Hours for the Week
A.	Pre-course apprenticeship 4 months duration	1)	One lecture per week for the class	2	16
	30 students to be divided in 6 groups	2)	One discussion hour per week for each group	6	96
		3)	1 hour observation work per day with each group	36	576
B.	Post-course apprenticeship 4 months duration	1)	One hour discussion per week with each group	6	96
	30 students to be divided in 6 groups	2)	One hour observation for each group		
C.	Practical work during the vacation. 4 weeks duration	1)	One hour discussion per week with each group	6	24
	30 students to be divided in 6 groups	2)	One hour observation with each group per week	36	144
D.	Lectures for the whole class 36 weeks	1)	One hour lecture per week	8	288
E.	Discussion classes with two groups of 15 each		Four hours per week with each group	8	288
F.	Tutorials with six groups of 5 each		One hour per week with each group	6	216
G.	Practice Hours		Two hours with each group	4	96
			Total:		About 2500 in round figs.

With the maximum load of 15 lectures per week per lecturer, minimum of 5 lecturers are needed. If the school should provide research facility and field work facility for the staff, then a minimum of 6 lecturers are needed. The faculty might consist of one Professor, two Readers, two Lecturers, and two Demonstrators, or two Readers, two Lecturers and two Demonstrators in addition to one Research Assistant.

All this seems to be too ideal and ambitions. As the Review Committee recommends the ratio of students to teachers as 10:1. But one thing has been made clear by all the important Committees — that the departments need full-time teachers. Recent study shows the number of full-time teachers to be only 42 between 24 schools with an average of less than 2 per school varying from nil to 5. The ratio of part-time teachers to full-time teachers is less than 1 to 2.

Faculty Adequacy in Quality

Qualitative assessment of the faculty is most subjective, however, the academic and professional qualifications, research and field work are usually considered as measures. As far as academic and professional qualifications are concerned, Doctorate would be an ideal but practically impossible to get for another few years at least. Coming to the Research work, it is for the school to provide the opportunities and facilities which as yet has not been implemented by many. Coming to the 'field work', we have already been aware from the comments from students and professions that this is one of the essential requirements for efficient teaching. There are two possibilities, i) the school should adopt a policy of sending every teacher to field work at frequent intervals, ii) libraries should be kind enough to provide a few of their top librarians to the school at frequent intervals. Secondment of teachers to libraries and librarians to school is what is desirable. This is one of those suggestions recommended by one and all at different occasions but somehow has not been implemented anywhere.

ENTRANTS - FUTURE PLANS

Performance of the Students in the Course

A separate form was designed to test the students' evaluation from the staff. 14 departments sent the completed forms. Out of 232 students assessed by the teachers, 20 students have scored Grade A (very good), 108 Grade B (good), 83 Grade C (average) and 21 Grade D (poor).

In response to question E1, only 17% of the students have stated to expect less than 50% and 38% expect to get second division, 22% expect to get 1st division and only 6% to get distinction. 7 departments had sent the results of the final B.Lib.Sc. examination. Out of the 128 candidates 12 (10%) secured 1st division, 90 (70%) secured 2nd division, and 26 (20%) secured 3rd division. A comparison of the students actual results with that of the expected results show that the expectation of 45% of the students tally with their score in the examination, only 12% have under-estimated their performance, whereas 43% have over-estimated.

An effort was also made to examine how far the performance of the student at the Higher Secondary level is retained at the Intermediate, Graduate and B.Lib.Sc. levels. If we compare marks of the students in the B.A. or M.A. examinations and the marks in the B.Lib.Sc. examination, it seems 24% have scored less, 27% have retained their performance, whereas 49% have improved their previous record. It is calculated that the chances of a 3rd division student in B.A. getting first, and second division in B.Lib.Sc. are .09 and .27 respectivelly.

Jobs

University libraries seem to be more attractive to work in than other libraries. 33% want to serve in a university library of whom 40% want to work in the classification and cataloguing section and 20% in reference section.. 13% want to serve in college libraries — almost equivalent to the number of students with college library experience enrolled in the courses. 15% want to serve in a public library and 15% want to serve in a special library — mostly science students. 26% have not yet made up their mind as to the nature of the job to suit their temperament.

The expectation of the salary is as follows. 16% expect less than Rs.300 per month; 39.1% between Rs.300 to 500 p.m.; 10% above Rs.500 p.m. and for the rest it is difficult to imagine.

Research Interest

The replies to the question regarding research interest is quite encouraging. Contrary to the criticism that we hear from the profession regarding Classification, a majority of the students are interested in research in Classification. (It may be interpreted that this interest may be a biased development in a student because of the importance given to this in the course). 35% are interested in Cataloguing, 35% in Reference Service. 20% are interested in 'libraries and machines'. It is encouraging to see that 'automation' has been given a thought by these future librarians, 20% are interested in Documentation, which also is encouraging for developing documentation services.

How true is the statement 'Education for librarianship does not end with the school but begins with the school'. It is for the profession to see that opportunities are provided for 'continuing education for librarianship'. The future of these students, their moulding, development and enrichment — all depend on the profession.

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APPENDIX

LIBRARY SCIENCE STUDENTS SURVEY (1966-67)

QUESTIONNAIRE

(A)

(The information collected through this questionnaire will only be used for research purposes and will not otherwise be disclosed).

I. GENERAL INFORMATION

1. Name...

2. Age (Years)... 3. Sex...

4. Residential address...

5. Mother tongue...

6. Languages (including Indian, English and other European) you can.

S. No.	Speak only	Read and write	Read only	Read, Write and speak	Proficient
1					
2					
3					
4					

7. Academic qualifications (Matriculation, Graduate and Post Graduate levels or their equivalents).

S. No.	Course	Name of the Institution	Year of passing	Subject	Percentage of marks	Medium of Instruction
1						
2						
3						
4						

(2)

8. Have you had any working experience ?.. Yes/No.

S. No.	Name of the Institution	Position held	Period	Salary
1				
2				
3				

9. Were you taking part in extra-curricular activities ?..

If so please name,

S. No.	Activity	Yes/No	Regular	Casual	Hours per week spent
A.	Games				
1.	Indoor and outdoor ...				
2.	Cricket ...				
3.	Hockey ...				
4.	Chess ...				
5.	Cards ...				
6.	Other. ...				
B.	Hobby				
1.	Stamp collection ...				
2.	Photography ...				
3.	....				
4.	....				
5.	Handicrafts ...				
6.	....				
7.	....				
C.	Literary & Cultural ...				
1.	Debate ...				
2.	Drama ...				
3.	Music ...				
4.	....				
5.	....				
6.	....				

(3)

10. Were you a member of any association ?.. Yes/No.
If so please name.

Type	Association	S. No.	Name of the Association	Period
A.	Professional Association e. g.	1		
	Library Association, etc.	2		
		3		
B.	Literary, Cultural and Social	1		
	Associations e. g. Dramatic, etc.	2		
		3		
C.	Civic Associations e. g. N. C. C. Scouts, Home Guards.	1		
		2		
		3		
D.	Political Parties	1		
		2		
		3		

11. Have you appeared for any competitive Examinations ?...................................... Yes/No.

S. No.	Name of the Examination	Year	Results
1.	N. D. A. ...		
2.	I. I. T. ...		
3.	I. A. S. ...		
4.	P. C. S. ...		
5.	Other (Specify) ...		
6.	....		

(4)

12. Have you taken any other proficiency tests ?.. Yes/No.

S. No.	Name of the Test	Year	Result
1.	Intelligence ...		
2.	General Knowledge ...		
3.	Sanskrit ...		
4.	Hindi ...		
5.	Other (Specify) ...		
6.	....		

13. Have you been reading general literature other than the textbooks and recommended books ?................................

S. No.	Material	Yes/No	Regular	Casual	Hours per week Spent.
1.	Books ...				
2.	News papers (Dailies and Weeklies) ...				
3.	Magazines (Entertainment) ...				
4.	Journals (Technical) ...				

Please list a few books that you have read last year.

Books	Use Remarks	(Enjoyed —1) (Bored —2) (for Remarks)

a..............................

b..............................

c..............................

Please mention the news papers, magazines, journals, that you read regulary

Newspapers	Language	Remarks
a.		
b.		
c.		

(5)

Yes/No.

Magazines	Language	Remarks
a.		
b.		
c.		

Journals	Language	Remarks
a.		
b.		
c.		

B. Use of the Library before Joining this Course.

1. Did you make use of the library facilities ?...
If Yes, what type of Library ?

S. No.	Type of the Library	Yes/No	Daily	Once a week	Casually
1.	University ...				
2.	College ...				
3.	Public ...				
4.	Other ...				

2. If you were not making use of the library was its because **(Use tick mark)**
(a) Library facilities were not available ?.. ....
(b) You never felt the need to use the library ?................................ .. ..
(c) You were not interested in using the library ?.............................. ... .
(d) Other reason (Specify).. ....

(6)

3. If you were making use of the library was it for the purpose of (Use tick mark)
   - (a) General reading.. ....
   - (b) Text books and recommended books.. ....
   - (c) Periodicals.. ....
   - (d) Preparation of the assignments or tutorials or Seminars.................. ....
   - (d) Others (Specify).. ....

4. Did you think that the library was a part of your formal education ?.. Yes/No.

5. Were you familiar with the following items in the libraries you used ? (Use tick mark)
   - (a) Catalogue.. ....
   - (b) Shelf arrangement.. ....
   - (c) Reference book.. ....
   - (d) Service rendered.. ....

6. How much time a week did you spend in the library ?.. No. of hours

7. How much time a week did you spend in reading the books borrowed from the library ?.. ....

8. Did you apply for any other Course before applying for this Course ? Yes/No.

   If yes name the course.. ....
   - (1) ....
   - (2) ....
   - (3) ....

C. Information Regarding your Interest in Joining the Present Course.

1. How did you come to know about the B. Lib. Sc. Course (or its equivalent) ? (Use tick mark)
   - (a) While doing the Certificate Course ....
   - (b) While working in a library (as an employee) ....
   - (c) On the advice of a librarian you know please give his
     - (i) Name ;..
     - (ii) Position :..
   - (d) On the advice of a person other than the librarian. Please give his
     - (i) Name :..
     - (ii) Position :..
   - (e) Guidance from a Vocational Centre.. ....
   - (f) Impressed by the service of the library you were using.................. ....

(7)

(g) As a predetermined aim of your life to become a librarian............ (Use tick mark)
....
(h) By seeing an advertisement... ....

2. What was the purpose or your joining the Library Science Course? ....
   (a) Wanted to serve the community... ....
   (b) To have a professional career.. ....
   (c) In order to get a job easily.. ....
   (d) As a last resort.. ....

3. Did you appear for preadmission interview?.................................. Yes/No.

3-1. What type of questions were asked in the preadmission interview?
   (a)
   (b)
   (c)

D. Information Regarding the Course.

1. Did you have an orientation or pretraining lecture or practice course? Yes/No.
   Please State briefly your opinion of the orientation course.
   ....
   ....
   ....
   (i) Do you think that the orientation course gave you clear picture of the library as an institution?.. Yes/No.
   (ii) Do you think that the orientation course has helped you in following the lectures?.. Yes/No.

2. Do you have to work in the library during course and submit the report?.. Yes/No.
   (i) Does the practical work in the library during the course, (Use tick mark)
      (a) Help you to follow the lectures better ....
      (b) Supplement your study.. ....
      (c) Hinder you study.. ....
   (ii) Do you enjoy the practice work in the library during the course? Yes/No.
   ....

3. Do you have to submit the sessional work or assignment work for internal assessment?.. Yes/No.

(8)

(i) Do you think that this sessional work helps you in improving expression and reasoning power and helps you in your final examination ?.. Yes/No.

(ii) Do you think that the sessional work is time consuming and leaves very little time for your other studies ?.. Yes/No.

Please state briefly your opinion of the sessional work,

4. Do you have a general knowledge paper ?.. Yes/No.

(i) How do you study for the general knowledge paper ? (Use tick mark)

(a) Reading News-paper.. ....
(b) Using reference books.. ....
(c) Reading books.. ....
(d) Reading general knowledge digests.. ....
(e) Listening to Radio.. ....
(f) Discussion with friends.. ....
(g) Listening to class lectures.. ....
(h) Other (specify).. ....

(ii) Do you find the general knowledge paper (Use tick mark)

(a) Interesting.. ....
(b) Boring.. ....
(c) Indifferent.. ....

(iii) Do you find the general knowledge paper has helped you in enlarging your out-look for the course ?.. Yes/No.

(iv) If you don't have the general knowledge paper,

(a) Do you want to have it as an optional paper ? ....
(b) Would you like to have interesting lectures on different topics ? ....
(c) You are not interested as you already know something about everything.. ....

5. Do you have a paper on Indian History/Culture.. Yes/No.

(i) Do you find the paper on Indian History/Culture (Use tick mark)

(a) Interesting.. ....
(b) Boring.. ....
(c) Indifferent.. ....

(ii) Do you think that the paper on Indian History/Culture has helped you in enlarging your outlook, and in understanding the need to develop library profession in India ?.. Yes/No.

(9)

6. Did you follow the technical terminology in the lectures in the first term ?......	**Yes/No.**
(i) If you followed it, was it because of	**(Use tick mark)**
(a) Pre-course use of the library......	......
(b) Your orientation lectures......	......
(c) Technical terminology was easy......	......
(ii) If you did not follow, have you been thinking that	
(a) A more thorough orientation course would have helped you ?	**Yes/No.**
(b) A Pre-course apprenticeship in a library would have helped	**Yes/No.**
7. Do you have in your course	**(Use tick mark)**
(a) Tutorial system......	......
(b) Seminar system......	......
(c) Discussion classes......	......
(d) Practice hours......	......
(e) Lectures from outsiders......	......
(i) Which of following methods of teaching release your energies and stimulate you to further studies on the subject	**(Use tick mark)**
(a) Lecture......	......
(b) Practice......	......
(c) Tutorial......	......
(d) Discussion......	......
(e) Seminars......	......
(ii) How much time per week do you spend for preparation for	**No. of hours per week.**
(a) Lecture......	......
(b) Tutorial......	......
(c) Seminar......	......
(d) Practicals......	......
8. What is your method of study	**(Use tick mark)**
(a) Allotment of equal time to all subjects	......
(b) Allotment of the time in proportion to the reading	......
(c) Random......	......
(d) Other (Specify)......	......

9. Mention the papers that you are most interested in order of preference.

(a)

(b)

(c)

(10)

10. Mention the papers that you find difficult to understand.

    (a)
    (b)
    (c)

    Please give the reasons.

11. How much time do you spend for studying classification ? — Hours per week

    (a) Theory ....
    (b) Practice ....
    (c) Tutorials ....
    (d) Assignments ....

    (i) Do you think that too much importance is given to classification? .... Yes/No.

    (ii) Do you think only one scheme of classification should be taught? .... Yes/No.

    If so which scheme ? and why ?

    (iii) Do you prefer one combined paper for classification theory and Practice ?............ Yes/No.

    (iv) Do you think that practical classification based on actual books and discussions following them with internal assessment only, is better than the present plan as it exists ?............ Yes/No.

12. Would you like to have optional papers ?............ Yes/No.

    (i) Which of the papers you would like to have optional

    (a)
    (b)
    (c)

13. In general do you feel that more importance is to be given for your tutorial. Seminar and discussions and practice in the library in your final assessment ?............ Yes/No.

14. Would you like to have a complusory library tour during the course ? .... Yes/No.

15. Would you like to have complusory apprenticeship in a library after the course to qualify yourself as a librarian ? .... Yes/No.

16. Do you think complusory registration or membership of a Library Association should be enforced in order to qualify and practice as a professional librarian ?............ Yes/No.

(11)

17. Are you satisfied with the library provision of your department regarding ?

    (a) Text books... Yes/No.

    (b) Reference books... Yes/No.

    (c) Periodicals... Yes/No.

18. Are you making use of any library other than your Department or University Library ?.. Yes/No.

19. Do you have Library Science Student's Association ? .... Yes/No.

    (i) Which activities of the Student's Association have you enjoyed most ?

    (a)

    (b)

    (c)

20. Please state briefly your general impressions regarding the Course.

....

....

....

....

E. Information Regarding Your Future Plan.

1. What percentage of marks are you hoping to get ? ....

2. What career do you hope to take up in order of preference ?

S. No.	Type of Library	Position	Salary
1.			
2.			
3.			

3. Do you intend to take up any research project............................ ? Yes/No

4. What area of Library Science research interests you ?

- (a) Classification
- (b) Cataloguing
- (c) Documentation
- (d) Reference service
- (e) Bibliographies
- (f) Machines and Libraries

THANK YOU VERY MUCH FOR YOUR KIND CO-OPERATION,

DEPARTMENT OF LIBRARY SCIENCE
UNIVERSITY OF DELHI,
DELHI-7.

Мадам Т.И. Скрипкина и Профессор Г.Г. Фирсов являются двумя заслуженными педагогами в деле подготовки библиотечных кадров при библиотечной школе Гос. Института Культуры Им. Н.К. Крупской в Ленинграде.

Проф. Фирсов в действительности является деканом этой школы. Принадлежать к этому передовому Институту подготовки библиотечных кадров является само по себе большой почестью для любого преподавателя библотечных наук в Советском Союзе. В 1967-68 годах Институт насчитывал в своих анналах около 5.100 студентов, 550 - на основном факультете, 750 - на вечернем курсе и 3.300 - на заочном курсе. Преподавательскую ответственность несли 13 Профессоров причисленных к Институту. Этих немногих данных вполне достаточно для того чтобы осветить диапазон поля этого Института также как и видное место занимаемое им в Культурно-просветительной системе страны.

В настоящей статье предлагается краткий очерк сложной системы просвещения по библиотечному делу преобладающей в Советском Союзе, в описании наших двух почтенных корреспондентов, как например организационной структуры , различных уровней просвещения, широкой программы различных предметов в Конспекте училища, специализации и т.д.

1968 год является выдающимся годом в жизни Института Им. Крупской - старейшей школе по подготовке библиотечных кадров в стране-поскольку Институт отмечает Пятидесятилетие его весьма полезной просветительной деятельности.

Система библиотечного образования в СССР.

Т.И.СКРИПКИНА и Г.Г.ФИРСОВ.

I. Система образования

В дореволюционной России, за исключением отдельных краткосрочных курсов, подготовка библиотечных кадров отсутствовала.

Великая Октябрьская социалистическая революция придала огромный размах библиотечному делу и создала все необходимые условия для его успешного развития. В стране невиданными доселе темпами росла сеть библиотек, в связи с чем требовалась целая армия профессионально-образованных, квалифицированных библиотекарей.

Центральный Комитет Партии и Советское правительство в течение истекших пятидесяти лет неоднократно занимались вопросами библиотечного образования, принимали ряд важных постановлений и решений по его организации и совершенствованию. Много внимания этой проблеме уделяли В.И.Ленин и Н.К.Крупская.

Вскоре после установления Советской власти по всей стране начали организовываться специальные семинары по библиотечному делу, курсы по подготовке библиотекарей с самыми различными сроками обучения.

В декабре 1918 года, несмотря на сложную политическую обстановку, трудное экономическое положение молодой Советской республики, в Петрограде (ныне Ленинграде) был открыт Институт внешкольного образования с библиотечным факультетом, реорганизованный в дальнейшем в Институт культуры имени Н.К.Крупской. Этим было положено начало высшему библиотечному образованию в СССР.

Сейчас, когда в СССР имеется 370 тысяч различных библиотек, насчитывающих свыше 2,3 миллиардов книг и журналов на их полках и более 110 миллионов читателей - подготовка и повышение квалификации библиотекарей является предметом особой заботы государства. Система, основы которой были заложены в нашей стране еще в первые годы Советской власти окрепла, развилась и осуществляется следующим образом.

Библиотекарей высшей квалификации подготавливают 20 учебных заведений, размещенных во всех союзных республиках, а библиотекари средней квалификации обучаются в 110 учебных заведениях. Ежегодно в СССР выпускается около трех тысяч специалистов с высшим образованием и почти восемь тысяч со средним. Наряду с подготовкой специалистов универсального профиля для работы в публичных библиотеках, осуществляется обучение библиотекарей для технических библиотек, специалистов для детских библиотек. Выпускники библиотечных учебных заведений с успехом работают в различных по своему характеру библиотеках: массовых, научных, универсальных и отраслевых, самостоятельных и существующих при промышленных предприятиях, научных и культурно-просветительных учреждениях, учебных заведениях.

Основным и важнейшим звеном в системе подготовки библиотечных кадров является высшее образование, получаемое на библиотечных факультетах высших учебных заведений. Наиболее крупные библиотечные факультеты находятся в составе Институтов культуры в Москве, Ленинграде, в Восточной Сибири (Улан-Удэ), на Украине (Харьков). За последнее время созданы Институты Культуры в Краснодаре, Чимкенте (Средняя Азия). С нового учебного года функционируют институты культуры в Челябинске, Хабаровске и Киеве. Кроме того, библиотечные факультеты (или отделения) имеются при некоторых университетах или педагогических институтах (Минск, Вильнюс, Рига, Таллин, Баку, Тбилиси, Ереван, Ташкент, Алма-Ата). Здесь обучаются преимущественно национальные кадры.

Библиотечных работников средней квалификации готовят в библиотечных техникумах и на библиотечных отделениях при культурно-просветительных училищах.

Наиболее крупные научные библиотеки Советского Союза - Государственная Библиотека СССР имени В.И.Ленина в Москве, Государственная Публичная библиотека имени М.Е.Салтыкова-Щедрина в Ленинграде, Библиотека Академии наук СССР и ряд других имеют свою специальную систему курсов для повышения квалификации сотрудников и библиотечной подготовки лиц с высшим отраслевым (небиблиотечным) образованием.

Наконец, для подготовки научных работников в области библиотековедения и библиографии и преподавателей этих дисциплин в высших учебных заведениях, при Московском и Ленинградском институтах культуры организована аспирантура.

В библиотечный техникум и на библиотечное отделение культурно-просветительных училищ принимаются лица с полным средним образованием.

Для поступления в Институт требуется наличие законченного среднего образования и успешная сдача конкурсных экзаменов по русскому языку (сочинение и литературу), Истории СССР и иностранному языку. Срок обучения на дневном отделении определен в четыре года; на вечернем и заочном отделениях - пять лет. При зачислении в институт предпочтение отдается абитуриентам с трудовым стажем; на вечернее и заочное отделение принимаются преимущественно библиотечные работники.

На библиотечных факультетах, как правило, имеются три отделения: I) массовых и научных библиотек; 2) детских и школьных библиотек и 3) технических библиотек.

Библиотечная подготовка студентов на отделениях обеспечивается специальными кафедрами: I) библиотековедения, 2) библиографии, 3) детской литературы и библиотечной работы с детьми, 4) технической литературы, 5) научной информации, 6) основ естествознания, техники и сельского хозяйства.

В аспирантуру могут быть зачислены библиотечные работники, имеющие высшее образование, проработавшие в библиотеках не менее трех лет и успешно сдавшие конкурсные экзамены по истории Коммунистической партии Советского Союза, иностранному языку и по избранной специальности. Кроме того, до экзаменов все поступающие в аспирантуру должны представить письменный реферат.

Срок обучения в аспирантуре установлен на стационарном отделении (с отрывом от производства) три года; на заочном - четыре года. За время обучения аспирант должен сдать три кандидатских экзамена (по истории философии, иностранному языку и по специальности) и защитить диссертацию. Аспирантам успешно выполнившим индивидуальные планы и защитившим диссертации присваивается Советом Института ученая степень кандидата педагогических наук по специальности "библиотековедение и библиография".

Обучение в средних, высших учебных заведениях и в аспирантуре бесплатное. Более 80% студентов институтов культуры получают стипендию, а значительной части иногородних учащихся, кроме того, предоставляются места в общежитии. Все студенты во время обучения бесплатно пользуются учебниками и другой необходимой литературой.

Выпускники всех ступеней обучения обеспечиваются работой в библиотеках разных типов.

2. Ленинградский государственный Институт культуры имени Н.К.Крупской

Среди учебных заведений, готовящих специалистов высшей квалификации - старейшим является Ленинградский Институт культуры имени Н.К.Крупской, праздновавший в декабре I968 г. свой полувековой юбилей.

За пятьдесят лет Институт подготовил огромную многотысячную армию библиотечных работников. Только за послевоенные годы из стен Института вышло свыше десяти тысяч молодых специалистов. Его воспитанники работают во всех уголках необъятного Советского Союза. Некоторые питомцы Института выросли в крупных специалистов библиотечного дела, многие из них посвятили себя педагогической деятельности.

Положительные результаты в деле подготовки библиотечных кадров объясняются замечательными традициями, выработанными в течение длительного времени. Институт всегда стремился сочетать учебно-воспитательную работу с привитием практических навыков и привлечением студентов к научной деятельности.

Для обеспечения учебного процесса Институт располагает двумя большими зданиями, в которых размещаются лекционные залы, аудитории, лаборатории, кабинеты и библиотека, насчитывающая более 200 тысяч томов книг и периодических изданий. Занятия ведут опытные преподаватели, как правило, в прошлом высококвалифицированные библиотечные работники с большим стажем, значительная часть из них имеет ученые степени и звания.

2.I. Подготовка кадров для массовых и научных библиотек

Подготовка библиотекарей высшей квалификации для массовых библиотек - самой крупной сети-осуществляется Институтом с первых дней его организации и всегда представляла собою одну из важнейших задач.

Учебный план Отделения массовых библиотек включает: I) Ряд циклов общеобразовательных предметов: общественно-политических, исторических, литературоведческих, психолого-педагогических и иностранный язык; 2) большое количество специальных дисциплин: библиотековедение, общую библиографию, ряд отраслевых библиографий, историю библиотечного дело, историю книги.

В результате изучения специальных дисциплин студенты научаются правильно составлять каталоги, организовывать библиотечные фонды, квалифицированно обслуживать книгой читателей, приобретают навыки справочно-библиографической работы, овладевают методикой составления библиографических пособий (разыскание, отбор, систематизация, аннотирование произведений печати), а также методами устной пропаганды книг.

Кроме изучения теории библиотечного дела, выполнения лабораторных и семинарских занятий, учебным планом по разделу специальной подготовки предусматривается написание трех курсовых сочинений и производственная практика, которую студенты проходят в библиотеках: на П курсе по организации фондов и каталогов, на Ш - по работе с читателем и на IУ курсе по общим вопросам организации и методики библиотечного дела и библиографической работы.

Для студентов, желающих специализироваться в какой - либо области библиотечного дела (краеведческая работа, работа с технической книгой, преподавание специальных предметов и т.д.) , учебный план включает систему "курсов по выбору" и спецсеминаров. Завершается обучение студентов сдачей государственных экзаменов: по истории КПСС, литературе, библиотековедению и библиографии и иностранному языку.

2.2. Подготовка работников для детских и школьных библиотек

Подготовка библиотекарей детских и школьных библиотек имеет много общего с планом отделения массовых и научных библиотек. Однако, учитывая особенности работы с детьми в учебном плане предусмотрены некоторые отклонения. Так, например, введен курс "Библиография детской литературы", значительно расширено изучение детской литературы, включены практикумы по педагогике и психологии. В то же время сокращено количество часов по курсу "Библиография художественной литературы"; вместо библиографий естественнонаучной и технической книги читается курс "Библиография научно-познавательной литературы". Профилированно преподаются курсы Библиографий общественно-политической и художественной литературы, а также Организация каталогов. Производственная практика проводится в детских и школьных библиотеках. На государственный экзамен вместо литературы выносится детская литература.

2.3. Подготовка специалистов для технических библиотек.

Подготовка кадров для технических библиотек прежде всего учитывает специфику работы и функции этих учреждений. Учебный план данного отделения значительно отличается от плана отделения массовых и научных библиотек. Общеобразовательная подготовка, кроме общих для всего библиотечного факультета общественно-политических дисциплин включает ряд предметов, знакомящих студентов с развитием естествознания, техники. Вместо общеисторических дисциплин введен курс "Истории народного хозяйства". Значительно усилено изучение иностранных языков.

В части специальной подготовки большое внимание уделяется изучению библиографии русской и зарубежной технической литературы, различных систем классификации (Библиотеки имени В.И.Ленина, УДК, Ранганатана и др.), методики предметизации и справочно-информационной работе. Включены новые предметы: "Научно-техническая информация", "Патентоведение", "Технические средства библиотечной и информационной работы". Профилю подготовки соответствуют и факультативные дисциплины: " Инженерная психология", "Промышленная эстетика" и др. Производственную практику студенты проходят в крупных технических библиотеках. На государственные экзамены выносятся: I) История КПСС, 2) библиотековедение, 3) научно-техническая информация и 4) иностранный язык.

3. Научная деятельность

В работе библиотечного факультета большое место занимает научная деятельность: совершенствование программ, подготовка учебников и учебных пособий по специальным дисциплинам. Изучается ленинское наследие и вклад Н.К.Крупской в развитие библиотековедения и библиографии, проблемы читательских интересов и руководства чтением взрослых, детей и юношества, исследуются вопросы построения сети библиотек, экономика библиотечного дела, актуальные вопросы библиографии, проблема сравнительной эффективности информационно-поисковых систем и многие другие вопросы.

Характерной чертой научной деятельности является ее коллективность. Часть тем разрабатывается совместно с преподавателями других институтов и с работниками научных и массовых библиотек и учреждений научно-технической информации. Ежегодно Институт устраивает теоретические конференции преподавателей, на которых подводятся итоги их научной деятельности и конференции студенческого научного общества.

Кроме учебников, учебных и методических пособий Институт регулярно выпускает "Труды", "Сборники студенческих работ" и др. издания, в которых отражается научная деятельность профессорско-преподавательского состава.

4. Международные связи

С каждым годом в СССР активно расширяются международные связи в области библиотечного дела в целом и во взаимоотношениях отдельных библиотечных учреждений. Они осуществляются в самых различных формах: книгообмен, выступления преподавателей на страницах зарубежной печати, чтение лекций и докладов, целевые экскурсии, личные связи членов специальных кафедр с библиотекарями и преподавателями разных стран. Так, например, трудно назвать страну, представители которой не побывали бы в Ленинградском Институте культуры и, наоборот, какие страны не посетили работники Института. Ленинградский государственный Институт культуры так же, как и многие другие вузы Советского Союза принимает участие в подготовке специалистов с высшим образованием для зарубежных стран, а также содействует в повышении квалификации их работников. В Институте обучаются студенты из многих стран: Болгарии, Вьетнама, Монголии, Алжира, Сирии, Судана, Афганистана. Большое культурное значение имеют обмены студенческими делегациями. В последние годы преподаватели Института принимают активное участие в деятельности международных библиотечных организаций (ФИАБ, Международной комиссии по каталогизации, международных библиотечных семинарах и совещаниях).

Многие преподаватели Института выступают на страницах зарубежных библиотечных журналов. Широкие отклики в иностранной печати получили изданные Московским и Ленинградским институтами культуры учебники, учебные и практические пособия по библиотековедению и библиографии.

В июне 1968 года в Институте происходило Ш совещание по вопросам высшего библиотечного образования в социалистических странах, наметившее пути дальнейшего совершенствования подготовки молодых специалистов.

Установившиеся международные связи учебных заведений, ведущих подготовку библиотечных кадров со многими зарубежными странами, обмен опытом, участие преподавателей этих учреждений в иностранной периодической печати и зарубежных библиотечных работников и преподавателей кафедр библиотековедения в советских изданиях - все это способствует развитию библиотечного дела и укреплению мира во всем мире.

5. Проблемы и дискуссии

Библиотечное образование в Советском Союзе за истекшие пятьдесят лет добилось значительных успехов. Однако советским людям не свойственна самоуспокоенность. Они стремятся достигнуть новых, более высоких показателей.

Пути совершенствования подготовки библиотечных кадров советские специалисты видят не только в расширении числа обучающихся, но и в постоянном повышении качества подготовки библиотекарей. Чтобы успешно работать в библиотеке, будущие библиотекари должны быть вооружены всеми необходимыми средствами для эффективного и оперативного обслуживания современной науки и производства, служащими для всеобщего блага, для процветания всего народа. При этом основой высшего образования библиотекарей всех профилей должна быть общественно-политическая, общеобразовательная и общекультурная подготовка, необходимые для библиотекаря-пропагандиста книги и воспитателя читателей.

Непрерывный рост информационного потока ставит перед Институтами культуры необходимость включения в учебные планы новых дисциплин (науковедение, педагогика взрослых, социология, библиотечная психология и др.). Особое значение приобретают для будущих специалистов такие предметы как организация научной информации, механизация и автоматизация библиотечного дела. Практического решения требует вопрос о соотношении высшего и среднего библиотечного образования. Не решена еще полностью проблема подготовки кадров для научных библиотек разного профиля. Дискуссионным остается пока вопрос о профиле библиографа-информатора.

Новые задачи, которые ставит современность перед библиотеками всех типов и все возрастающие требования к библиотечным работникам с неизбежностью вызовут необходимость пересмотра сроков обучения.

6. ЗАКЛЮЧЕНИЕ

В нашей статье мы изложили организацию подготовки библиотечных специалистов в Ленинградском институте культуры. Аналогично поставлено обучение и в других высших учебных заведений поскольку все они руководствуются единым учебным планом и едиными программами.

Полувековой юбилей Ленинградского института культуры имени Н.К.Крупской - большое событие не только в его жизни. Это юбилей высшего библиотечного образования в СССР, это убедительное подтверждение правильности и жизненности советской системы подготовки библиотечных кадров высшей квалификации.

Вступая во второе пятидесятилетие, профессорско-преподавательский состав Института культуры СССР приложит еще больше усилий для совершенствования учебного процесса и придания мощного размаха научной деятельности.

Madam T.I. Skripkina and Professor G.G. Firsov are two distinguished teachers of library science at the library school of N.K. Krupskaya Leningrad State Institute of Culture. Professor Firsov is actually the Dean of this library school. To be associated with this foremost Institute of librarianship is by itself a measure of the eminence of any library science teacher in the Soviet Union. In 1967-68 the Institute had about 5,100 students on its roll - 550 in the main faculty, 750 in the evening section and 3,300 in the correspondence section. Its library had on its shelves more than 250,000 volumes. The teaching responsibility was shared by 13 full time Professors. These few figures are enough to suggest the vastness of this Institute and also its important place in the educational system of the country.

In the present article our two distinguished contributors outline the contours of the elaborate system of library education in the Soviet Union, like the organizational structure, different levels of training, broad subject areas in the curriculum, specialization, etc.

The year 1968 is of special significance and marks an important landmark for the N.K. Krupskaya Institute, the oldest library school in the country, as it completes its fifty years of very useful existence.

THE SYSTEM OF LIBRARY EDUCATION IN THE U.S.S.R.

T.I. Skripkina

G.G. Firsov

In pre-revolutionary Russia, excluding a few short time courses, there was no preparatory courses for library cadres. The great October Socialist Revolution led to an enormous change in the library field and created all the necessary conditions for its successful development. With an unforseen tempo the library net-work in the country started expanding requiring a whole army of professionally trained librarians. The Central Committee for the Party and the Soviet government very often occupied themselves with the problems of library training in the last 50 years and they took a number of important decisions and gave general directions for its organization and perfection. Especially V.I. Lenin and N.K. Krupskaya gave much attention to this problem.

Soon after the establishment of the Soviet power throughout the country special seminars on librarianship and courses for training librarians with different periods of training were organized.

In December 1918, inspite of the complex political situation, and the difficult economic condition of the young Soviet Republic, a library faculty was opened in Petrograd (now Leningrad) in the Institute of Non Scholastic Adult Education. This was later on reorganized into the Krupskaya Institute of Culture. With this the beginning of higher library education in USSR was made.

Today when there are 370,00 different libraries in USSR containing more than 2.3 millions of books and journals in their stacks and having more than 110 millions of readers, the training and increasing the qualifications of librarians is the subject of special attention from the government. The system which was initiated in the first years of Soviet power in our country developed and has at present taken the following shape.

1. *The Present System*

The librarians with higher qualifications are trained in 20 institutes located in all the union republics and librarians of middle qualifications are trained in 110 institutes. About 3000 specialists and about 8000 with higher education and secondary education respectively come out of these institutes annually in USSR. Along with the training of specialists with a general training for working in public libraries, training of librarians in technical libraries and that of specialists in children's libraries are conducted. The graduates of the library institutes work successfully in different types of libraries,

This is the English version of the previous article by Madam Skripkina and Prof. Firsov. The translation has been done by A.R. Chakravarty of Insdoc.

i.e. in public, scientific, general, departmental and independent libraries, in factory libraries, in scientific and cultural institutes and in higher institutes of learning. The basic and the most important link in the system of preparation of library cadres is higher education which they receive in library faculties of the higher institutes of learning. The biggest library faculties are attached with the institutes of culture in Moscow, in Leningrad, in Eastern Siberia (Ulan-Uda) and in Ukrain (Kharkov). Recently institutes of culture were created in Krasnodar, Chimkent (in Central Asia). With the new session, Institutes of Culture began to function in Cheliabinsk, Khavarovsk and Kiev. Besides library faculties, departments also exist in some of the universities or Padagogical Institutes (Minsk, Vilnius, Riga, Tallinn, Baku, Tbilisi, Erevan, Tashkent, Alma-Ata). Here mainly the State cadres are trained. Library workers with secondary qualification are trained in library polytechnics, and in the library departments of the Cultural - Educational schools. The biggest scientific libraries of the Soviet Union, the V.I. Lenin State Library of USSR in Moscow, M.E. Saltykov - Scherdrin State Public library in Leningrad Library of the Academy of Sciences USSR and a number of others have their own special system of courses for increasing the qualifications of the workers and for training personnel with higher education in non-library disciplines for library work. Finally, for the preparation of the scientific workers in the field of library science and in bibliography and for teachers of this discipline in the higher institutes of learning, Ph.D. courses have been organized in Moscow and Leningrad institutes. People with incomplete secondary education may enter the Library polytechnics and Library department of Cultural - Educational Schools. For admission to Institutes, candidates must have finished secondary education and should pass entrance examination in Russian (composition and literature), history of USSR and a foreign language. The period of training in the day course is 4 years, in the evening and in the correspondence courses it is 5 years. Candidates with working experience are preferred for admission to the Institutes. In the evening and correspondence courses, mainly library workers are accepted. In the library faculties as a rule there are three groups: (1) General and Scientific libraries; (2) Children and School libraries; and (3) Technical libraries. The library training of the students in these groups are given in the main areas of: (1) Library Science; (2) Bibliography (3) Children's literature and library work with children; (4) Technical Literature; (5) Scientific Information; and (6) Fundamentals of Science, Technology and Agriculture. For Ph.D. courses, candidates, having higher education and who have worked at least 3 years in a library are accepted. They are also required to pass the entrance examination in the history of the Communist party of the Soviet Union, a foreign language and in a chosen speciality. Besides, before the examination of the Ph.D., candidates must submit a written dissertation. The period of training at the Ph.D. level in the full time course (not working) is three years, in the correspondence course it is 4 years. During the period of training, the Ph.D. candidate must pass three examinations (in the history of philosophy, foreign language and in his speciality) and must defend a thesis. The Ph.D. students successfully completing the individual plan and defending the thesis is invested with a degree of the candidate of pedagogical sciences in the speciality of library science and bibliography by the Academic Council of the Institute. Training in the secondary courses in higher institutes of learning and in the Ph.D. courses is without fees. More than 80% of the students of the Institutes of culture get stipend and a considerable number of students coming from other cities get accommodation in the students hostels. All the students during the course training use textbooks and other necessary literature without any payment. The graduates from all these courses are ensured work in different types of libraries.

2. *N.K. Krupskaya Leningrad State Institute of Culture*

Amongst the Institutes of learning for training specialists with high qualifications, the oldest is the N.K. Krupskaya Leningrad Institute of Culture which is going to celebrate its 50 years jubilee in December 1968. For the last 50 years, the Institute prepared library workers in thousands. Only in the post-war years about 10,000 young specialists were trained by this Institute. Its trainees work in all the corners of the immense Soviet Union.

Some of the students of the Institute have grown to be prominent specialists and library scientists and many devoted themselves to teaching activities. Positive results in this work of training library cadre could be explained only by pointing to its wonderful traditions developed during a long period. The Institute always strives to combine education and training with the promotion of practical habits and to attract students towards scientific activities.

The Institute is located in two big buildings which contain lecture halls, auditorium, laboratory and a library containing about 200,000 volumes of books and periodicals. Experienced teachers conduct the courses. They are highly qualified people having long years of experience of working in libraries. Most of them possess scientific and academic degrees.

2.1 Training of Cadres for General and Scientific Libraries

The training of librarians with higher qualifications for general libraries (the largest network) were being carried out by the Institute from its very inception and is one of the most important tasks assigned to it. The study plan of the department of general libraries includes: (1) number of general education subjects: socio-political sciences, literature, psychology and pedagogy and foreign language; (2) a large number of special disciplines: in library science, in general bibliography, in a number of special bibliographies, history of library work and history of books. As a result of the study of special disciplines the students learn to make catalogues correctly, to organize library funds, to give quality service to the readers, to master the habits of reference - bibliographical work. They possess the methodology of preparing bibliographic guides (search, selection, systemization, and annotation of the periodical literature), as well as the methods of oral propaganda of books. Besides the study of the theory of library work and carrying out laboratory and seminar work in the branch of special preparation there also exists the wirting of 3 sessional dissertations and actual practice in library work which the students carry out in the libraries. They are divided into the following categories of subjects: a course in reference service, library budgeting and cataloguing, and a course in general problems of organization and methodology of library work and bibliography. For students specialising in a given field of library work (original work, work of technical books, teaching of special subjects etc), the study plan includes a system of optional courses and special seminars. The training of students end only on passing the state examinations in the history of Communist Party of the Soviet Union literature, library science & bibliography and foreign language.

2.2 Training of Workers for Children and School Libraries

The training of librarians for children and school libraries has many things in common with the syllabus of the department of general and scientific libraries. However, due to the speciality of work with children, there are a few deviations in the study plan, for example, there is a course on the bibliography of children's literature. The children's literature requires here deeper study and practical work is to be carried out in pedagogy and psychology. At the same time, number of hours devoted to the course in bibliography of artistic literature is much less here. Instead of bibliography of scientific and technical books, a course on bibliography of literature of science of a popular character is given. Secondary courses in a bibliography of social,political and artistic literature and organization of catalogues are also given. Practical work is done in children and school libraries. In the state examination the subject literature is replaced by children's literature.

2.3 Training of Specialist for Technical Libraries

The training of cadres for technical libraries first of all takes into consideration the speciality of work and functions of these institutes. The syllabus of this branch considerably differs from that of the general and scientific library branch. The general educational training, besides the common disciplines of social and political science in all the library faculties, includes a number of subjects which inform the students of the development of science and technology. Instead of general historical discipline, a course on the history of national economy is introduced. The study of the foreign languages are also much more stressed. In the special training part, much more attention is given to the study of bibliography of Russian and foreign technical literature, different systems of classification (V.I. Lenin Library, UDC, Ranganathan etc.), methodology of subject classification and reference and information work. New subjects have also been introduced such as scientific technical information, patents, mechanization in library and information work. The secondary courses are chosen according to the nature of the faculty discipline: for example "engineering psychology, industrial statistics", etc. Students carry out practical work in the main technical libraries. State examinations are conducted on the following subjects: (1) History of CPSU; (2) Library Science; (3) Scientific - technical Information; and (4) Foreign languages.

3. *Scientific Activities*

Scientific activities play a major role in the working of the library faculty, in the perfection of the programme and in the preparation of textbooks and guides in special disciplines. Lenin's inheritance and the contribution of N.K. Kruskapaya towards the development of library science and bibliography are studied. Problems of reader's interest and guiding of adult, children and adolescent readers are also studied. The problems of library network, economy of library work, present problem of bibliography, problems of comparative efficiency of information retrieval systems and many other problems are also investigated.

Team work is the characteristic feature of scientific activities. Therefore work on the projects are carried out with the collaboration of teachers of other institutes and with the workers of scientific and general libraries and of the Institute of Scientific and Technical Information. Every year the Institute organizes theoretical conferences for the teachers where the fundamentals of their scientific activities are discussed. Conferences of the students of scientific bodies are also organized Besides textbooks and methodological guides, the Institute regularly publishes transactions, collection of students work etc, where the scientific activity of the professors, lecturers and lecturing staff is reflected.

4. *International Links*

In USSR, international relations in the field of library work as a whole as well as with individual library organisations is widening every year. This is carried out in different forms, by book exchange, by the teachers writing for the foreign press, by reading of lectures and reports, special excursions etc. Personal links with the members of the library profession with the librarians and teachers in different countries have been established. Thus, for example, it is difficult to name a country whose representative has not visited the Leningrad Institute of Culture and conversely a country which has not been visited by the workers of the Institute. The Leningrad State Institute of Culture like similar other Higher Institute of learning of the Soviet Union takes part in training of specialists with high education from foreign countries and also work for the increase of qualification of foreign workers. Students from many countries study in the Institute; from Bulgaria, Vietnam, Mongolia, Algeria, Syria, Sudan and Afghanistan. Exchange of students delegation has a great cultural significance. In the recent years, the teachers of the Institute took active part in the activities of International Library Organizations (FID, International Conference on Cataloguing, International Library Seminars and Congresses). Many teachers of the Institute write for the foreign library journals. The publications of the Moscow and Leningrad Institute of Culture, for example, the books and practical guides in library science and bibliography got much of appreciation in the foreign press. In June 1968, the third Congress on problems of higher library education in the Socialist countries was held in the Institute. This Congress noted the ways of further improvement of the training system of young specialists. Establishment of international links with higher institutes of training in library science in many foreign countries, exchange of experts and participation of the teachers of these institutes in the foreign periodicals, publishing of the works of foreign library workers and members of the librarianship-teaching departments in Soviet publications, all these lead to the development of library work and consolidation of peace in the whole world.

5. *Problems and Discussions*

Library education in the Soviet Union had considerable success in the last 50 years. However self-complacency is not a characteristic of the Soviet people. They strive to achieve newer and higher ideals. The perfection of the training of library cadres means to the Soviet specialist not only increase in the number of trainees but also in constant elevation of the quality of training of librarians. In order to work successfully in libraries the future librarians must be equipped with all the necessary means for efficient and practical servicing of contemporary science and industry, to serve for general welfare and education of the people. On the basis of this fundamental principle, the higher education of librarians in all categories should always consists of socio-political, general-education, and general-cultural preparation which is very necessary for librarians i.e. propagators of books and educator of readers. The constant growth of information flow presents before the Institute of Culture the necessity of including in the study plan new disciplines (science of science, pedagogy of adult, educational sociology, library psychology etc). In this respect such subjects like organization of scientific information, mechanization and automation of library work have acquired special importance for future specialists. The problem of the relationship between higher and secondary library education also needs a practical decision. The problem of preparation of cadres for scientific libraries with different emphasis has not yet been resolved. The problem about the categories of the librarian-informator remains as it is in the level of controversy. The new task which the contemporary world presents before the librarians of all types and the increasing demands of the library workers inevitably lead to the necessity of review of the period of training.

6. *Conclusion*

In our article we explained the organization of the training of library specialists in the Leningrad Institute of Culture. Training in other higher institutes of learning is similar as all of them are guided by one uniform study plan and uniform programme. The 50 years jubilee of higher library education in USSR doubtlessly confirms the correctness and vitality of Soviet system of training of librarians with high qualification. Entering to second half of our century, the teaching staff of the Institute of Culture are striving their best for the perfection of the educational system and to contribute to the grandiose development of scientific activities.

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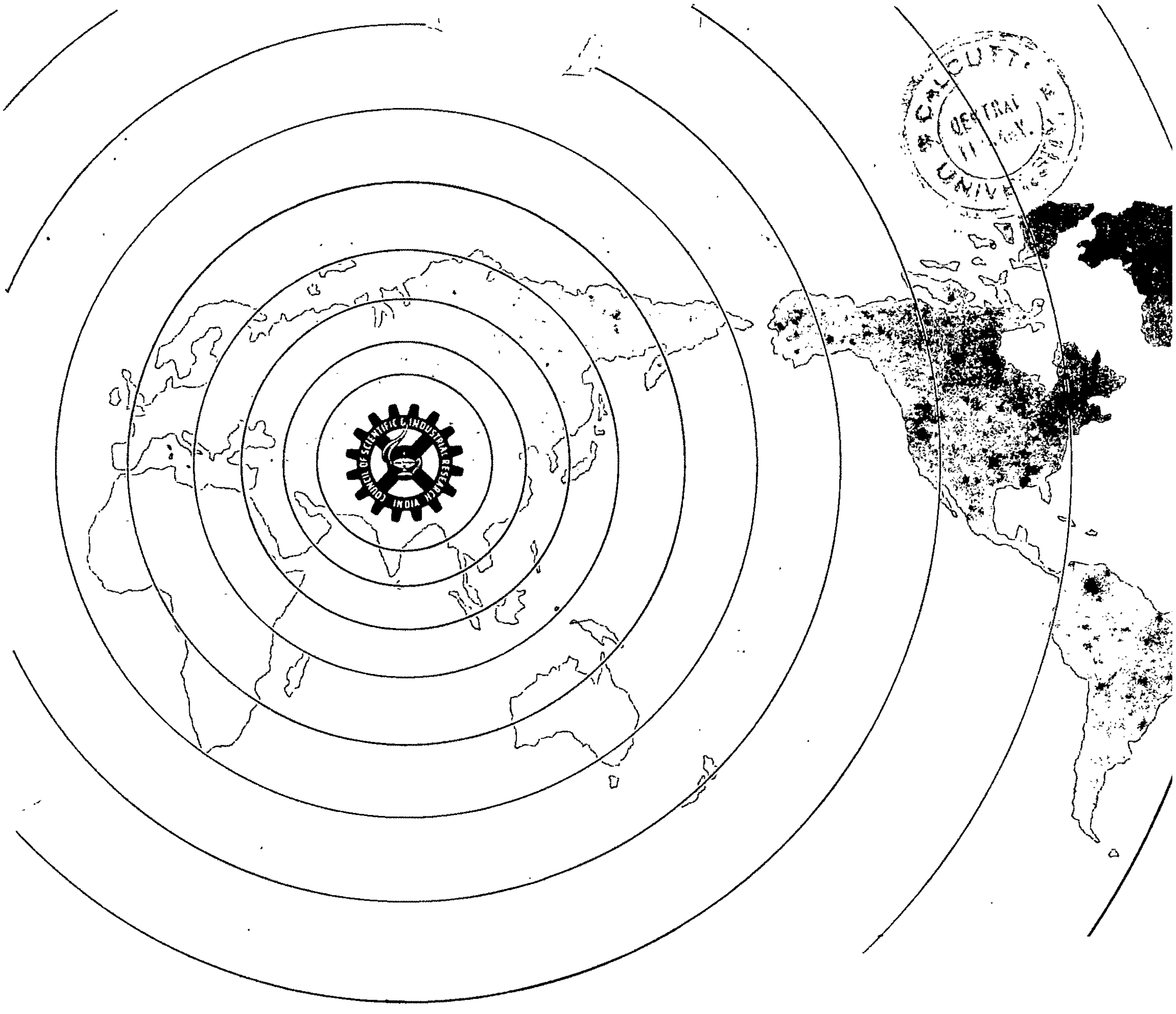

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INTRODUCTION

Under the plan for Cultural and Scientific Exchange for 1967-68, operating between the Government of India and the Union of Soviet Socialistic Republics, I visited the Soviet Union between April 11 to May 26, 1968, with the object of studying the scientific information activities in that country.

The USSR Academy of Sciences, through the All Union Institute for Scientific and Technical Information had played host to me and made arrangements for my visits to a number of information institutes and libraries in Moscow, Leningrad and Kiev. The report of this study tour of information institutes and libraries in the Soviet Union is presented here in the form of an article. A period of six weeks was perhaps too short to do justice to the visits to several institutions and I was further handicapped by language difficulty. I was constantly feeling that I have been missing some essential details in the process of interpretation. It is, therefore, possible that some errors might have been made in my understanding and collection of facts. This report is therefore likely to suffer from such limitations to some extent. Further, this report appears in print, long after my return from the Soviet Union and the information and data presented here could only represent the situation as present at the time of my visit to the Soviet Union.

ORGANISATION OF A STATE SYSTEM OF SCIENTIFIC AND TECHNICAL INFORMATION

Historical Evolution of Soviet Information Services

Scientific information had received attention even from the early years of Soviet rule. At the initiative of V.I. Lenin, a decree was adopted to procure and evaluate foreign literature. For this purpose, a Central Joint Committee on Procurement and Assessment of Foreign Literature (KOMINOLIT) was established and it was entrusted with the task of ensuring that one copy of all the latest foreign scientific and technical literature is received in some of the major libraries. KOMINOLIT is thus the pioneer organisation to engage itself in scientific information activities. The Bureau of Foreign Science and Technology (BINT) (Buro Inostrannoi Nauki i Tekhniki) established in 1921, had brought out the first Abstract Directory of Technical Literature (Referativnyi Ukazatel Tekhnicheskoi Literaturi). This Journal was printed in some 250 copies and circulated to institutions. In a short period of activity, the Bureau had collected information about 500, 000 publications. At about the same time, a reference journal devoted to unpublished Soviet works, "Information on Scientific and Technical Works in the Republics" (Soobschehenia o Nauchno-tekhnicheskikh Rabotakh v Respublike) was also started. It was published from 1920 to 1932

During the subsequent period of industrialisation and collectivisation of agriculture, several measures were taken for further development of scientific and technological information services. From 1928, the year-books "Scientific Literature of the USSR" (Nauchnaya Literatura SSSR) began to be published. The coverage included Social and Natural Sciences, Agriculture, Technology and Medicine. It was published up to 1935. Simultaneously, a service was provided for current bibliographical information through a monthly bulletin "News of Technical Literature" (Novosti Tekhnicheskoi Literaturi) (1924-1930) and 'Technical Card Catalogue' (Tekhnicheskoi Kartoteki) (1929-1953).

In 1931, the Central Committee of the Communist Party adopted a resolution on organising industrial engineering propaganda wherein emphasis was placed on the survey of foreign literature dealing with technological advancements. Consequently, scientific institutes began to issue every month abstracts journals under the title 'For Mastering Techniques' (Za Ovladenie Tekhnikoi). This service appeared between 1931 to 1935. The service brought out series such as Chemical Abstracts Journal (Khimicheskii Referativnyi Zhurnal), Review of Energetics (Energeticheskoe Obozrenie) and Building Industry (Stroiindustria). From 1933 to 1938, a review periodical "World Technology" (Mirovaya Tekhnika) dealing with mechanical engineering and metallurgy was published. In addition, 'News on Petroleum Technology' (Novosti Neftyanoi Tekhniki) (1932-1935) and 'News on Foreign Metallurgy' (Novosti Inostrannoi Metallurgii) (1935-1938) were published. They carried reviews and translations of important foreign literature on the subjects. 'News on Foreign Metallurgy' replaced an earlier review journal "Achievements of Metallurgy Abroad (1929-1935) (Dostizheniya Metallurgii za Granitsei).

Organisation of Central Reference Service and working out its theoretical and practical details have been engaging the attention of the authorities and a Conference on Theoretical Problems of Library Science and Bibliography was held in 1936, to discuss them. In the same year, the responsibility for disseminating current information on technology was entrusted to the State Science Library (Gosudarstvennaya Nauchnaya Biblioteka). It started publishing a monthly journal "News on Technical Literature (1936-1953) (Novosti Tekhnicheskoi Literaturi). It appeared in six series - Mining Industry, Metallurgy and Metal Technology, Mechanical Engineering, Building Industry, Chemistry and Chemical Industry, Energetic and Electrical Industry. The coverage included all Soviet material, 15,000 foreign technical periodicals and unpublished works of scientific research institutions. The Academy of Sciences USSR published two abstracts journals 'Physical and Mathematical Abstracts Journal' (Fiziko-Matematicheskii Referativnyi Zhurnal) and 'Chemistry Abstracting Journal' (Khimicheskii Referativnyi Zhurnal) between 1938 and 1941.

It was only in recent years that the Soviet Union has witnessed more intensive development in scientific and technical information activities. In view of the increasing tempo of scientific and technological activities, it became necessary to create a network of information institutes in the different fields of science and technology. Even this network of information institutes was not sufficient as they would not offer an exhaustive service for dissemination of foreign information. To solve this problem, the creation of the Institute of Scientific Information of the Academy of Sciences USSR in 1952 by a special act of the Government was contemplated. The Institute was subsequently converted in 1956 into an All-Union Institute of Scientific and Technical Information (Vsesoiuznyi Institut Nauchnoi i Teknicheskoi Informatsii) (VINITI) subordinating it to besides the Academy of Sciences, the State Committee on Science and Technology of the Council of Ministers of USSR. VINITI was also given the status of the principal information organ of the country.

Control and Authority of the State System

It is a well established fact in the Soviet Union that scientific information constitutes an integral part of research, design and production processes. The development of a national system of scientific and technical information owes much to this recognition. The national system of scientific and technical information functions under the overall direction of the Department of Scientific and Technical Information and Propaganda (Otdel Nauchnoi i Tekhnicheskoi Informatsii i Agitatsii) of the State Committee of the Council of Ministers of USSR on Science and Technology (Gosudarstvennyi Komitet CMSSSR po Nauke i Tekhnike) (Head: Mr N B Arutinuov). The Department of Scietific and Technical Information and Propaganda is assisted by the Scientific Council on Problems of Scientific and Technical Information and Propaganda (Chairman: Prof A.L. Mikhailov). The functions of the Department of Scientific and Technical Information and Propaganda are to:-

1 "work out long term plans for the development of scientific and technical information;

2 ensure wide introduction of advanced techniques and equipment;

3 supervise compliance by all bodies concerned with information work with established methods of organising

scientific and technical information; and

4 disseminate advanced technological experience in all branches of national economy."

The credit for having conceived a well organised, unified and rational system of scientific and technical information should entirely go to the Department of Scientific and Technical Information and Propaganda. The national system of scientific and technical information provides for:

1 "establishment of scientific information agencies on functional design;

2 division of labour among information agencies operating at various levels;

3 centralised processing of documentary data and publication of information publications on national and foreign literature;

4 specialisation by information agencies according to branches of the national economy;

5 cooperation between information agencies and users of information;

6 network of coordinated reference collections and uniform system of classification;

7 increasing participation of scientists and engineers in information work; and

8 effective international cooperation in the field.

Levels of Information Network

The national system comprises of six All-Union institutes of information, the State Public Library on Science and Technology, USSR (Gosudarstvennaya Publichnaya Nauchno-Technicheskaya Biblioteka SSSR (GPNTB), about 63 central branch information institutes, about 15 republican information centres and numerous bureaus and departments of scientific and technical information at research institutes, design offices, industrial enterprises and so on. A network of technical libraries also forms part of the national system. Information disseminated from the All-Union information institutes, central branch information institutes and the republican information centres to the individual bureaus and departments of scientific and technical information constitutes a descending flow of information (top to bottom). The individual bureaus and departments generate an ascending flow of information which consists of unpublished sources of information. It is therefore stated that the national system provides for a two-way flow of information.

All-Union Institutes

The six All-Union information institutes functioning under the national system are:

1 All Union Institute of Scientific and Technical Information (Vsesoyuznyi Institut Nauchnoi i Teknicheskoi Informatsii) (VINITI). 1952.

2 All Union Research Institute of Medical and Medico-Technical Information (Vsesoyuznyi Nauchno-issledovatal'ski Institut Meditsinskoi i Mediko-Tekhnicheskoi Informatsii) (VNIMI). 1962.

3 All Union Research Institute of Technical Information, Classification and Coding (Vsesoyuznyi Nauchno-issledovatel'ski Institut Tekhnicheskoi Informatsii, Klassifikatsii i Kodirovania) (VNIIKI). 1964.

4 All Union Institute of Scientific and Technical Information in Agriculture (Vsesoyuznyi Institut Nauchnoi i Tekhnicheskoi Informatsii po Sel'skokhozyastvo) (VINTISH). 1965.

5 Central Institute of Scientific Information on Building and Architecture (Tsentral'nyi Nauchnoi Institut Stroiindustria (CINIS). 1943.

6 Central Research Institute of Patent Information (Tsentral'nyi Nauchno-issledovatel'skii Institut Patentnoi Informatsii) (CNIIPI). 1963.

The All-Union information institutes examine scientific and technical literature published throughout the world, and prepare information publications such as Referativnyi Zhurnal, Ekspress-Informatsia, and Itogi Nauki i Tekhniki. The disciplines covered by the All-union information institutes have been clearly determined among themselves and duplication is avoided. The object of the information publications is to keep a large number of Soviet scientists and engineers posted with the latest developments taking place throughout the world. More than a million abstracts of documents are being prepared in a year by all the All-union information institutes taken together.

Branch Institutes

The Central branch information institutes are usually devoted to a single branch of industry. They are controlled by the ministries which are responsible for the concerned industries. The branch institutes endeavour to collect, evaluate, classify and disseminate information on advances in science and technology and manufacture by organisations and enterprises of their respective branches. Their major tasks are:

1 preparation of information publications on the basis of unpublished sources of information;

2 compilation of analytical surveys of the main technical and economic problems of the given branch of industry; and

3 establishment of a reference information service in the concerned branch of industry on the basis of both published and unpublished information.

The branch institutes issue abstract cards which make it possible for organisations and enterprises to be aware of all achievements in research and development. Information reaches the branch institutes from 'below' as research, experimental and developmental work gets started first in enterprises, design offices and research institutes. It also disseminates information obtained from 'above' based evaluation, classification and generalisation of information material on advances in the fields, mostly in the form of reviews, abstracts and bibliographies.

Republican Centres

A few years ago, the country was divided on the basis of economic regions. Each one of the economic regions had an information centre to cater to the needs of the region. When the economic regions have been abolished now, it posed a problem to fit the regional information centres in the overall national system of scietific and technical information. However, the problem has been solved now by making them the republican centres of information. Obviously the branch institutes cannot take into account the regional peculiarities, specific features of economic construction or advances in science and technology in all the republics that constitute the USSR. The republican centres meet this lacuna. Their main tasks are:

1 "generalisation and popularisation of scientific and technical advances, important inventions, and advanced experiences in production technology in the leading branches of the republican economy;

2 promotion of practical use of the most significant scientific and technological developments and advanced experience in industrial enterprises, research institutes and design organisations in the republics; and

3 supervision of the arrangements for the utilisation by the republican organisations and enterprises of the achievements of science and technology discussed in the publications of the All Union and central branch information institutes and of the institutes' own recommendations."

A republican centre sometimes translates and publishes in the republic's national language, information material supplied by the All-union and branch institutes. Some republican centres are required to act as branch information centres for individual branches most highly developed in the republics [e.g. Georgia for tea, and Uzbekistan for cotton raising and sericulture].

Individual Bureaux

Every individual research institute, design office, or enterprise must have an information set up. Depending upon the size of the parent organisation, the strength of the information department is determined. Research and design institutes have Departments of Scientific and Technical Information (ONTI) while industrial enterprises have Technological Information Bureaux (BTI). The information departments aim to:

1 "secure information, systematise, evaluate and generalise data on scientific and technological advances relevant to the parent institution;

2 prepare information material and disseminate it to research workers, designers, technologists and specialists as the case may be;

3 organise for the purpose of practical utilisation the information material published by the All-union and branch information institutes;

4 coordinate exchange of experience within the institute and between the institute and the associated research, design or planning organisations; and

5 prepare information material on the results of research on recent design and technological projects and submit them to branch institutes (upward flow of information).

Coordination

Coordination of information services, presently achieved in the Soviet Union is something worth emulating by other countries. It is a great lesson particularly to India. As explained earlier, in the national system of scientific and technical information, the responsibilities of the information institutes functioning at various levels have been clearly established. The multitude of information institutes fits into the overall system in a well coordinated manner to form a national grid of scientific information. Coordination of information services helps to:

1 avoid duplication of material, resources and efforts;

2 control national economy;

3 channelise the available resources towards set goals;

4 expedite the flow of information with greater efficiency; and

5 aim at comprehensive and complete coverage in the services offered.

The Scientific Council on Problems of Scientific and Technical Information and Propaganda of the State Committee of the Council of Ministers of USSR on Science and Technology is the ultimate plenary authority on matters of coordination of information services. VINITI has been invested with the responsibility for enforcing the coordination efforts. A Department of Coordination functions in VINITI since 1963, to take necessary steps in this respect. The areas of operation of the six All-Union institutes are clearly delineated to avoid any dissipation of effort. Similarly, the branch institutes have the major responsibility for controlling unpublished information, in as much as the All-union institutes are already taking care of published information. The question of handling foreign literature is also centralised with the All-union institutes. The branch institutes in turn coordinate information activities of all the units coming under their purview. They solve all the inter-institute problems. The republican centres solve problems of coordination among the different branch and individual information institutes coming under their jurisdiction. VINITI's Department of Coordination organises All-union meetings in which representatives from branch and republican centres and other All-union institutes participate to arrive at mutually agreed plans for improving the coordination efforts.

Centralisation

The national system of scientific and technical information aims at centralised processing of documentary data and publishing of abstracts, bibliographies and other information publications. The responsibility for handling published literature is centralised with the six All-Union institutes. In other words, the information flow from top to bottom is borne out of a centralised organisation. The All-Union institutes take care of the entire nation's requirements for published information and the other institutes are freed from this responsibility. This centralisation is of greater significance especially with regard to acquiring and processing foreign literature.

The abstracting services of VINITI are also borne out of a centralised organisation. All branches of science and technology with the exception of a few (which are taken care of by other All-union institutes) are covered in VINITI's abstracting services. As VINITI handles all the scientific disciplines and for that matter acquires a wide range of material, the problems of seepage and scatter of literature are solved conveniently. Further, the centralised processing brings about economy and efficiency in operation especially in the matter of covering inter-disciplinary material.

Soviet information system is usually cited as an example for centralised organisation. While it is largely so, it is not that the responsibilities for information services are vested with only a few All-union institutes at the apex. Multitude of information institutes exist at various tiers and flow of information is in several directions. They are all well connected with the apex centres to form a network.

Expenditure on Scientific and Technical Information

Notwithstanding my inquisitive queries, it was not possible for me to obtain a clear picture of the amount invested in information activities. I could not also collect the budget figure of the individual information institutes visited by me. To my queries as to how the budget requirements of the information institutes are determined, the usual reply has been that the budget requirements are based on the demands made by the institutions themselves which in turn is based on the previous year expenditure and the additional programmes in hand. No affirmative reply was forthcoming when asked whether any percentage say 5-6 per cent of the total research and development expenditure is earmarked for information activities.

The expenditure of the All-union institutes covers:

1 acquisition of material;

2 wages to staff; and

3 cost of physical production of information publications.

The cost of physical production of publications alone is sought to be recovered from the subscribers. Here again, the subscribers who are individuals, are given a concessional rate up to 50 per cent. Therefore, the Government subvention meets the entire cost of acquiring material and staff salary. Branch information institutes supply the information publications free of charge to all the subscribers. The activities of the branch institutes are therefore met entirely out of the Government funds. The position with regard to republican centres is a mixed one. Some services are free and some others are subscribed for.

It has been my general impression that there is a liberal provision of funds for information activities and I discussed this point with Prof. Mikhailov. He is of the opinion that research and development expenditure in the Soviet Union is more than the average of the world figure which is in the range of 2. 0 to 2. 5 per cent of the gross national income. He estimates that R & D expenditure in the Soviet Union last year has been much higher and somewhere between 5. 0 to 6. 0 per cent of the gross national income (or 600 million roubles). A provision varying between 3. 0 to 6. 0 per cent of the R & D expenditure is contemplated to be spent on scientific information activities. According to him, as the R & D expenditure is itself on the high side, the amount invested in information activities is also proportionately high and it can not be regarded excessive. Prof. Mikhailov quoted these figures off-hand without referring to any record and that too in an informal discussion and I cannot therefore vouchsafe the authenticity of the figures mentioned above.

Scientific and Technical Information Personnel

By and large, subject specialists constitute the bulk of the cadre of information workers. It is a common understanding that subject competence is essential for information work. The subject specialists acquire knowledge and expertise in information work either by experience or through a formal programme of instruction. The majority of the scientific staff employed in the information institutes are subject specialists. After them, the system/programme engineers occupy the next position in importance. Library trained personnel are also employed especially for bibliographical work. Linguists constitute a sizable proportion of information personnel. Therefore, the information personnel include subject specialists, systems engineers, librarians and linguists. Many of the editorial staff of VINITI are 'candidates' in some discipline or the other. When asked as to whether the subject specialists with their high proficiency in scientific disciplines prefer to discard a rather brighter scientific career for taking up information work, the answer is that by and large not much difficulty is experienced in this respect. The subject specialists are given in a week a day or two off from information work, to continue their scientific pursuit. A vast majority of the staff employed in the information institutes is ladies. To cite an example, out of the 106 persons employed in the Department of Preliminary Preparation of Literature of VINITI, as many as 96 are ladies.

I could not possibly go into the question of hierarchial staff structure of the information cadre. However, a vast majority of the staff employed in VINITI comes under a level corresponding to 'Assistants' in India. They are paid a monthly salary of about 120 roubles. Promotion to higher ranks is possible only if a person is 'candidate' in some discipline or other. Those who are candidates, get 400 roubles and above. The scientific staff in the information institutes get emoluments and status just like the scientists employed in the various organisations of the Academy of Sciences.

One of the characteristic features of the information institutes is that in addition to regular staff, they make use of a large number of part-time workers either as editors, abstractors or translators. The Chemistry and Biology Departments of VINITI alone have 3,500 and 2,000 abstractors on their panel. The panel workers are usually subject specialists with language background. They work in their spare time and are paid attractively. Scientists are willing to associate themselves in such a work as it helps them to be posted with current literature.

International Cooperation

VINITI maintains good relations with all international organisations active in the field of scientific and technical information. It is actively participating in the work of International Federation for Documentation. The present Secretary-General of FID, Dr. F.A. Sviridov is a senior member of the scientific staff of VINITI. VINITI is the national member of FID and Prof. A.I. Mikhailov has been the Vice-President for a number of terms. He is presently the Chairman of the FID Study Committee "Research on the Theoretical Basis of Information", the secretariat of which functions in VINITI. Dr. A.A. Fomin, Deputy Director, VINITI, is at present a Vice-President and a FID Councillor. He is an important member of the Central Classification Committee of FID. VINITI was to have played the host to the FID Conference in September 1968, but for its postponement. VINITI has cooperated with Unesco in organising a Symposium on Machine Abstracting and Indexing. It is also cooperating with the ICSU Abstracting Board which held its General Assembly in VINITI in 1965.

The Department of Foreign Relations of VINITI maintains good working relations with a number of international scientific organisations. The Department has two sectors, one for studying information systems abroad and the other for maintaining relations with international and national organisations.

VINITI is actively collaborating with the member countries of the Council of Mutual Economic Aid (Comecon). The cooperation is carried out through the Standing Working Group on Problems of Scientific and Technical Information of the Permanent Commission on Coordination of Scientific and Technical Research of the Council.

The Soviet Union is participating in the programmes of Unesco and IFLA connected with libraries. The All-Union State Library for Foreign Literature is publishing the translated version of Unesco Bulletin for Libraries and the IFLA News. Mrs. Margarita I Rudomino is at present the Vice-President of the International Federation of Library Associations.

SOURCES OF INFORMATION

Foreign Literature

The evolution of a national system of scientific and technical information especially the establishment of the All-Union Information Institutes had arisen out of the imperative need to provide the Soviet scientists and technologists with up-to-date information published in foreign sources. It is evident that the Government is particular about the need to keep the Soviet scientists in touch with scientific and technological developments taking place in the other parts of the world so that they do not lag behind. It may be more with a view to gain in the race for supremacy as an economic power. It may be also due to the reason that Soviet science has to gain much from the experiences of other countries. Therefore, considerable interest is shown in the centralised processing and dissemination of world's literature. All possible care is taken to ensure that nothing significant appearing in world's literature which is of interest to the various branches of national economy, escapes the attention of Soviet scientists. The famous abstracting Journal, the Referativnyi Zhurnal and the Ekspress Informatsia of the All-Union Institutes are mainly conceived towards meeting this end. The intake and scanning of foreign sources of information by VINITI and other All-Union Institutes is considerable. VINITI receives about 16,000 foreign serial titles from about 115 countries appearing in 164 languages. It also receives roughly 3,500 foreign monograph publications in a year. It gets by exchange 42 per cent of the serial titles from 3,170 organisations abroad, by subscription about 50 per cent and the remaining as gift. To sum up, it may be stated that the Soviet information system aims at a foolproof arrangement for the scientists to have access to foreign literature. Major libraries like Lenin State Library, Library of the Academy of Sciences of USSR, the GPENTB, the Saltykova Shedrin State Public Library, the Central Agricultural Library of the Ministry of Agriculture and the All-Union State Library of Foreign Literature concentrate on acquiring foreign literature. So much so, the other libraries devote their attention to the remaining areas. The acquisition of foreign literature is firstly by exchange and when it is not possible, purchase is resorted to through the Mezhdunarodnaia Kniga. The All-Union State Library for Foreign Literature maintains the union catalogue of foreign publications available in about 600 Soviet libraries and this tool helps inter-library borrowing. The union catalogue is brought out six times in a year as a serial publication. Preparations are underway to bring out an up-to-date union catalogue of foreign serials. It is evident that not all libraries clamour to acquire foreign literature at the cost of foreign exchange and only a selected few major libraries have this responsibility.

Domestic Literature

The literary output of the Soviet Union can be rated very high. According to the data available from VINITI, it has received in 1967, about 5,000 soviet periodicals and 3,500 books for notice in its Referativnyi Zhurnal. VNIIMI covers about 500 soviet medical periodicals in its Referativnyi Zhurnal. The Central Agricultural Library of the Ministry of Agriculture receives about 1,000 soviet agricultural periodicals. The All-Union Book Chamber which is responsible for bibliographical control of Soviet literature receives about 74.000 books in a year. This figure includes all branches of knowledge. According to law, the All-Union Book Chamber should receive 15 copies of all Soviet publications. One obligatory copy is retained by the Chamber and the remaining 14 are distributed to major libraries as depository copies. The All-Union Book Chamber which is 50 years old now, has control copies of 30 million Soviet publications. The bibliographical compilations being brought out by the All-Union Book Chamber are discussed elsewhere.

One common phenomena with regard to Soviet publications is that they are cheaper compared to the publications of other countries It is perhaps due to the reasons that 1) no profit motive prevails in book production, 2) the State subsidises book production to encourage dissemination of knowledge and 3) costlier methods of production to enhance the quality of publications are avoided. It is amusing to observe that an Indian student in Moscow who has acquired sufficient mastery over Russian language, prefers to purchase a Russian translated American text book because it works out cheaper to him than buying the original English edition.

Patent and Standard Specifications

The Soviet Union has joined recently the International Patent Union. Patenting system is in vogue in the Soviet Union but with a difference from other countries. The inventor, who is always an individual or group of individuals, does get a portion of the profit acruing out of his innovation as incentive. However, the patent right is vested with the Government unlike other countries where the rights are with the firm where the inventor is employed and makes the invention. About 95 per cent of the patents registered in the Soviet Union belong to the above category. However, in the remaining 5 per cent of the cases, the foreigners are permitted to register patents for the purpose of maintaining reciprocal trade arrangements. It is estimated according to the coverage in VINITI's Referativnyi Zhurnal that about 10,000 patents are registered in a year in the Soviet Union. The Central Research Institute of Patent Information (Tsentral'nyi Nauchno-issledovatel'skii Institut Patentnoi Informatsii) (CNIIPI) of the State Committee on Invention and Discoveries of the USSR Council of Ministers was established in 1963, to provide patent information service to industry. The All Union Patent Technical Library (Vsesoyuznaia Patentnaia Tekhnicheskaia Biblioteka) (VPTB) maintains a central collection of world's patents.

About 1,000 standard specifications are known to be released every year in the Soviet Union. The All-Union Research Institute of Technical Information, Classification and Coding (Vsesoiuznyi Nauchno-issledovatelskii Institut Tekhnicheskoi Informatsii, Klassifikatsii i Kodirovania) (VNIIKI) of the State Committee on Standards of the USSR Council of Ministers, has the responsibility for processing information on standards published from abroad and locally, and for bringing out information publications. VNIIKI has collected over 22,000 foreign standard specifications since its inception in 1964.

Report Literature

It appears that under the State Committee of the Council of Ministers of USSR on Science and Technology, a federal clearing house has been established recently to evaluate, analyse and disseminate information embodied in reports of various research and design institutes and industrial establishments. It is possible that the activities of this organisation may help administrators and policy makers to take stock of the work being carried on in all the establishments. As I had no opportunity to visit this organisation, I am not in a position to furnish any more authentic information.

Unpublished Literature

It is estimated that in the totality of literature output in the Soviet Union, about 60-70 per cent account for unpublished literature. The research and design institutes and industrial enterprises generate unpublished information on the results of research, design or technological innovation achieved by them. They submit the material to the relevant branch information institutes (upward flow of information). The branch information institutes evaluate, systematize and disseminate the unpublished information received from the bottom to all other individual institutes coming under their purview. The individual institutes are required by law to communicate every week, in the standard proforma (card) stipulated for the purpose, the significant results obtained during the period controlling unpublished information is systematically tackled. However, it may be stated that the success the Soviet Union has achieved in controlling the unpublished information, is possible more due to their socialistic pattern of society. It is difficult for countries which follow a mixed or capitalistic economy, to adopt the same methods. In the Soviet Union, every business enterprise is state owned, and there is no element of secracy in sharing experiences with others. The results obtained in one enterprise are equally available for consumption by others and there is no motive of competition. In a country like India, where public and private sectors operate, it is difficult for a private enterprise to forgo secrecy and part with technical knowhow. However, the Soviet system of controlling unpublished information, has some application in a country like ours, where unpublished information in agricultural fields which now remain unprocessed, could be put into effective use. In India, the state owned agricultural research stations mostly generate unpublished information and no element of secrecy will be involved if the information is to be disseminated widely.

SERVICES

Abstracting Service

Introduction

Abstracting services are by far the most important among the information services offered in the Soviet Union. As mentioned earlier, the abstracting services are intended for published information and that they have been established primarily out of necessity to disseminate foreign literature. As far as Soviet scientists are concerned, bulk of the literature of interest to them appear in foreign languages and it is a serious barrier to them. The abstracting services endeavour to mitigate this handicap. It is a via media between a bare bibliographical list and the Express Information service or full length translation. VINITI's eminent position is due to its famous Referativnyi Zhurnal series. The success, it has achieved in a short span of 14 years, to conceive of a universal abstracting service covering all disciplines in Science and Technology, is commendable. Centralised organisation of the abstracting services covering several disciplines has its distinct advantages such as solving problems of seepage and scatter and of overlapping in coverage among disciplines.

VINITI at present publishes the Referativnyi Zhurnal in 25 series and 33 parts. The main series are also split up into several parts and available as such separately. VNIIMI publishes the Meditsinskii Referativnyi Zhurnal (Medical Abstract Journal) in 13 different series. CINIS publishes an abstract journal Stroitet'stovo i Arkhitektura (Buildings and Architecture). VINTISH has just been offering abstracts card service in some 43 subjects in Agriculture. This service will be replaced by regular Referativnyi Zhurnal from 1969.

Coverage

VINITI's Referativnyi Zhurnal is international in scope with world coverage. Though intended for domestic use, it could have an appeal as a universal service but for the medium of Russian language. All the series of Viniti's Referativnyi Zhurnal taken together, about 21,000 serial titles published from 115 countries, 7,000 books of which nearly half are domestic production, 1,00,000 patents published from 26 countries, and 5,000 standard specifications are covered in a year (1967 data). In addition, efforts are made to notice technical conference proceedings, university theses (published in French and German only in addition to Russian) etc. It is stated that entries of about 25,000 books are taken from the national bibliographies of various countries for inclusion in the Referativnyi Zhurnal. About 3,500 articles are selected daily by the Department of Preliminary Preparation of Literature from the incoming material and passed on to the abstracting departments. About 800,000 items have been noticed in 1966 in all the issues of Referativnyi Zhurnal taken together.

It is claimed that the coverage in chemistry series of the Referativnyi Zhurnal and the Chemical Abstracts of USA is more or less on a par. In 1967, the Chemical Abstracts has noticed 2,07,000 articles and the Referativnyi Zhurnal some 2,02,000 articles. But the Referativnyi Zhurnal - Chemistry excludes Metallurgy, Physics, Agrochemistry etc. which are covered by the Chemical Abstracts. Moreover the Referativnyi Zhurnal has a separate section for Biochemistry. The Referativnyi Zhurnal covers about 4,000 serials exclusively devoted to chemistry and more than 50 per cent of the articles in chemistry are accounted by them. [The above figures are quoted by VINITI].

Time lag

The average time-gap between the publication of an article in the primary journal and the publication of an abstract of this article in the Referativnyi Zhurnal is claimed to be about four months. But this may be only possible with regard to the material of the Soviet Union and the other socialistic countires which are nearer home. The position may be also better in the case of other European countries. It is my experience that surface mail by which the publications are usually despatched, takes an unusually long time to reach the Soviet Union. For publications to be acquired on payment (works out to 50 per cent of the total intake) the service of the centralised agency of Mezhdunarodnaia Kniga is resorted to. It is not known how efficient is the set up in Mezhdunarodnaia Kinga to obtain publications quickly. However, I could gather the following information on the processing time for publishing an abstract after the host document is received in VINITI.

1	Department of Preliminary Preparation of Literature	2 weeks
2	Editorial Department before sending the material to the panel	1 week
3	Panel Editor	4 weeks
4	Editorial Department after receiving the material from the panel	2 weeks
5	Department of Manuscript Preparation	1 week
6	Production Department	2 weeks
	Total:	12 weeks

The above figures are my own estimate based on observations.

Organisation of the Referativnyi Zhurnal

The Main Editorial Board which is an advisory body composed of the Director, Deputy Directors, Scientific Secretaries, Chief Editors of the various series and a number of specially invited experts, is responsible for the overall publication of the Referativnyi Zhurnal.

The Department of Preliminary Preparation of Literature scans the incoming material, selects items of interest for inclusion in the various series, allots the items to the concerned editorial department, prepares bibliographical entries according to a standard practice, multiplies 8 sets of cards, gets photocopy of the articles and finally passes on the material to the Editorial Department. From the receipt of the host document, it is said that a period ranging from 3 to 15 days depending upon the language of the publication, is taken to pass on the material to the Editorial Department. Except English, French, and German, the titles of the documents are translated. If the document is of interest to more than one editorial department, the Department of Preliminary Preparation of Literature makes a note of all of them in order of interest. But the material goes first to the Editorial Department to which it is first assigned.

Each Editorial Department has a full time staff comprising scientists, engineers, and technologists as the case may be. The distribution of work among the scientific staff is first according to their speciality and then language. Each one of the series has a Chief Editor who is usually a person of outstanding scientific ability and who is not necessarily on the regular staff of VINITI. The Chief Editor of a series is responsible for taking procedural and policy decisions of scientific nature for running the series. In addition to the Chief Editor, the editorial departments have a head to look after day-to-day running of the Department. He is usually assisted by a scientific secretary.

The staff editors are responsible for editing and checking the matter received from the panel abstractors (about 15 to 20 abstracts are checked in a day). Only when suitable abstractors could not be found, the staff editors themselves prepare the abstracts. On an average 15 per cent of the abstracts in the Referativnyi Zhurnal are prepared by staff abstractors. No abstract will be published unless scrutinised and approved by the editors. The panel abstractors are specialists with language competence. They are distributed all over the Soviet Union. For example, in the Biology Editorial Department, they are 2,000 panel abstractors against a complement of 71 scientifically qualified full time staff. It is considered profitable to employ panel abstractors than having the work got done by staff abstractors, because the panel abstractors, who are working scientists are familiar with the current developments taking place in their field. A photocopy of the document is sent to the panel abstractors and they are expected to furnish two typed copies of the abstracts in a period of two weeks, though in actual practice one month is not uncommon.

Each editorial department and the sections under it have separate instruction manuals for the guidance of staff and panel abstractors. The manual is strictly followed by all concerned for maintaining uniformity and consistency.

If an article is of interest to more than one series, the abstracting work is got done by the department concerned to which it is first marked. This department after fulfilling its own requirements, passes on the material and the abstract prepared by it to the department next in the list. The subsequent departments modify the abstract as may be necessary and publish it in their series.

Presentation of Abstracts

The bibliographical description of the articles is already made in the Department of Preliminary Preparation of Literature according to the standard practice of the Soviet Union. The number of references cited in the article is given only in the case of review articles. Address of the author is not given except in the Botany Series. Discussion part of the article is not abstracted but a mention about it is made. For overcoming the problem of terminology, the Editorial Departments build up their own master file of technical terms and bring out in due course glossaries of technical terms. The abstracts in the Referativnyi Zhurnal tend to be longer because of the peculiarities of Russian language. The length of the abstracts depends upon the importance of the article. All important articles carry informative abstracts. Not very important ones carry indicative abstracts. Unimportant ones carry only bare bibliographical description. About 15 per cent of the articles in the Referativnyi Zhurnal carry only bare bibliographical details. Articles on Synthetic

Chemistry are abstracted in greater detail sometime running to two pages.

Slant to the abstracts is given according to necessity and for this reason, the author abstracts are not straightaway used. Even otherwise, they have their own difficulties to take the author abstracts straightaway.

Arrangement

The material in all the series of Referativnyi Zhurnal is arranged systematically according to a 'Rubricator' of the Abstracts publications of the USSR (Rubrikatore Referativnyi Izdanii SSSR) prepared by the Department of Scientific Methodology. The rubricator has about 20, 000 headings and arranged according to objects, methods of research and industrial process. It includes headings for Medicine Building and Architecture, Agriculture etc. The rubricator follows the linear arrangement and See also instructions are provided for collateral subjects. In the printed volume of the Referativnyi Zhurnal only main headings and certain subheadings are given. Under each subject heading, the matter is further sub-arranged according to subject but without feature headings. The value of classification is appreciated for arrangement of entries but it is not followed because the process is stated to be time-consuming. All the entires are given the Universal Decimal Classification number. It is paradoxical that considerable effort is made to give UDC class numbers but the arrangement of entires in the Referativnyi Zhurnal is not according to the UDC number but according to the rubricator. Obviously the division of subjects in UDC is not the same as the scientists would normally like it to be and it has become necessary to have another scheme according to the rubricator which has a greater appeal to scientists. The UDC numbers may at best help the subscribers to organise the material for their personal documentation according to them and this seems to be the only benefit accuring out of the provision of UDC numbers.

The Chemistry Series of the Referativnyi Zhurnal is cited here to show how each subject is divided into several parts, sections etc. The following are the divisions of the Chemistry Series of Referativnyi Zhurnal:-

1 Chemistry (General) - 2 parts, appears every two weeks;

2 Biochemistry - one part, appears every two weeks; and

3 Corrosion and Anti-corrosion - one part, appears monthly

Referativnyi Zhurnal - Chemistry (General) is published in the following sub-series:

1 General problems of chemistry;
2 Physical chemistry;
3 Inorganic chemistry;
4 Analytical chemistry;
5 Laboratory equipment;
6 Organic chemistry;
7 General problems of organic Chemistry;
8 Technology of organic substances;
9 Chemistry and processing of wood;
10 Chemistry of natural fuels and gases;
11 Chemistry of food stuffs; and
12 Surface active materials, scented substances, Macromolecular Chemistry.

Index

All the series of the Referativnyi Zhurnal have monthly and annual author indexes. Subject index is available only in annual cumulation. The Chemistry Series has annual systematic, formula and patent indexes. The index terms are picked out either from the title or the abstract as the case may be. The staff editors are expected to select the index terms. They have proposals to ask the panel abstractors also to select the index terms. Each editorial department has a subject index group for preparing the annual subject index. The Referativnyi Zhurnal - Scientific and Technical Information carries in each issue computer-prepared subject index using key terms.

Sales and Distribution

The Referativnyi Zhurnal is international in scope. But it is essentially intended for domestic use. There are more than 200, 000 subscribers according to 1966 data. About 20 per cent of the subscribers are from foreign countries. But for the Russian language, it will have a still better world market. The Socialistic countries heavily rely on the Referativnyi Zhurnal services. For other countries, its primary utility is to find out information about Russian work. Only the actual cost of physical production of the service is sought to be recovered through subscription. It works out to about 40 per cent of the total cost. Even in this subscription amount, an individual subscriber gets a concessional rate upto 50 per cent when compared to institutional subscribers. The Referativnyi Zhurnal is split up into several series and parts to enable the subscriber to obtain the portion relating to his interst only. It is a great advantage to the subscribers.

Express Information

Another familiar service offered by the information institutes is the Express Information (Ekspress Informatsia). It is not necessarily a current awareness service as its name implies in the documentation world today. It is a service for providing speedily short translation of foreign documents. It is a substitute for cover-to-cover translation attempts. Only the most important articles of applied value selected from a large number of journals published in different languages are given. It is meant for local use. VINITI brings out more than 60 series of Express Information. They are devoted to applied and practical problems of industrial importance. Only foreign articles are covered in this service. Some of the topics covered by the Express Information are Astronautics, Dynamics of Rockets, Computer Techniques, Radio Engineering, Electronics, Railway Transport, Scientific Information and so on. The service appears weekly. As the name indicates the main feature is fastness. While the Referativnyi Zhurnal takes more than 4 months, the Express Information publishes articles in less than 6 weeks. In each issue about 10 to 12 articles are noticed. Roughly a quarter of the articles noticed in the Referativnyi Zhurnal, gets reported in the Express Information also. There are at least 100,000 subscribers to this service.

About 10 series of the Express Information are brought out in Chemistry. The editors responsible for the Express Information mostly work outside. They come to VINITI at regular intervals, scan the incoming material, and make a selection of items for inclusion in the Express Information. The detailed translated summary of the article runs from 2 to 15 pages. Even drawings and illustrations are reproduced.

VNIIMI publishes its Express Information on ten topics. But here, the articles noticed in the Express Information are not repeated in the Referativnyi Zhurnal. They are 3 to 7 abstracts in the Express Information service of VNIIMI. All the series are monthly except Surgery (weekly) and Psychopharmacology (once in two months).

The Express Information service of VINTISH is yet another kind. It appears weekly but the coverage is limited to a ceiling of 40 pages. They are not brought out on any specific area as a series. The subject of the material of the Express Information changes in every issue. Only original articles are covered.

The Express Information service of the Library of the Ministry of Agriculture is also different. It is published once in two weeks and covers both foreign and domestic literature. It gives bare titles of books, translations received, titles of articles presented at the conferences, patents etc. It is a current awareness service.

Science Reviews

One of the important publications of VINITI is the Itogi Nauki i Tekhniki (Achievements in Science and Technology). It comes out in annual volumes. It carries a survey of the most important developments in a given branch of science and technology. This survey is based on abstracts published in the Referativnyi Zhurnal. Each volume of the Itogi Nauki i Tekhniki mentions the abstract number of the references of the Referativnyi Zhurnal which have been consulted for writing the review. In 1965-66, the Itogi Nauki i Tekhniki covered over 90 review publications with one or more survey articles on 16 main subjects.

VNIIKI studies and analyses the principles of standardisation followed in various organisations in the Soviet Union in order to isolate problems requiring coordination effort. It receives over 1,000 foreign periodicals of techno-economic importance for purpose of analysis and study of standardisation practices in vogue in other countries. Based on the above studies, it brings out survey type periodical and occasional publications for the benefit of Soviet industry and technology.

VNIIMI publishes annual surveys numbering about 30, in some of the specialised topics of Medicine. The material covered in the survey may be 1 to 5 years old. A bibliography of literature surveyed is given at the end of each survey.

VINTISH brings out the Accounts of Foreign Agriculture as and when material becomes available. They maintain contacts with 62 countries through embassies, for collecting the information. Such country surveys attempt to post the local scientists with the development taking place in other parts of the world. It also brings out reviews of foreign literature covering a certain period, on specific problems of interest to Soviet agricultural scientists.

One of the important functions of the branch information institutes is to bring out reviews on the basis of unpublished information on problems of technio-economic importance in the subject field concerned.

CINIS also brings out economic and statistical reviews on problems relating to building and architecture.

Signal Information

From 1968, VINITI has started publishing a current awareness service called the Signal Information (Signalnya Informatsia). It is a bibliographical bulletin. Its purpose is to inform the scientists quickly of all the forthcoming important publications appearing in domestic and foreign sources. It is many times faster than the Referativnyi Zhurnal. Scientists can order and get immediately copies of articles noticed in the Signal Information.

The Signal Information is at present published on Automation and Radio Electronics (Semi-monthly) (issues: "Automation, Telemechanism, and Computer mechanism", "Electronics and its applications" and "Radio technology") Physics (Monthly) (issue "Particles and Field") and Chemistry (Semi-monthly) (issue "Electrochemistry and Electrochemical Products"). The Signal Information consists of a permutation index using the key words in context, author index and bibliographic part. In the bibliographical part, full title of the articles in the language of the original is given. The entries are arranged in alphabetic order of the name of the journals wherein the articles have appeared. The list of periodicals covered is given in each issue.

Bibliographies and Indexing Periodicals

As mentioned earlier, while the information institutes concentrate on abstracting services, the libraries are involved more in bringing out bibliographical compilations and indexing services. The Central Library of the Ministry of Agriculture (Tsentralnaya Nauchnaya Selskokhzyaystvennaya Biblioteka) publishes a monthly index the Agricultural Literature of the USSR (Selskokhzyastvennaya Literatura SSSR). It registers 60,000 titles in a year. The material covered is approximately three months old. They have yet another bibliographical service devoted to foreign literature viz. the Bulletin of Foreign Agricultural Literature. It is a fortnightly and about 30,000 entries are covered in a year.

The Library of the Ministry of Chemical Industry, brings out a bibliographical list of Soviet and foreign literature on chemical industry. The Library of the Central Scientific Research Institute of Information and Technicoeconomic Researches on Ferrous Metallurgy (Tsentral'nyi Nauchno-issledovotel'skii Institut Informatsii i Tekhniko-Economicheskhikh Issledovanii Chernoi Metallurgii) brings out an annotated bibliography covering foreign and Soviet literature on ferrous metallurgy.

The All-Union State Library of Foreign Literature publishes 'Bibliography of Foreign Literature on Chemistry' (Khimiya; Sistematicheskii Ukazatel Statei V Inostannykh Zhurnalakh). It is a monthly classified list of articles serving as chemical information index.

The Lenin State Library publishes every month the 'Current Bibliographical Index of Literature on Librarianship' covering domestic literature. It also brings out a current bibliographical index of literature on Art as no other separate service for Art is available in USSR.

Ad hoc bibliographies on specialised topics either in anticipation or against demand are brought out in a very large number by almost all the libraries. Such a service is a part of the regular bibliography and reference function of the libraries. The libraries bring out bulky bibliographies on same part of their collection on occasions when it assumes topical interest. The bibliographical compilations aim to stimulate the use of material available in the libraries. The Lenin State Library brings out the "Bibliography of Soviet bibliographies". The GPNTB maintains records of bibliographies compiled by the various libraries and brings out lists of them periodically.

National Bibliographies

The All-Union Book Chamber (=Vsesouinznaia Knizhnaia Palata) is responsible for bibliographical control of the Soviet Union's literary output. There are also book chambers in the 14 republics. The republican book chambers are integrated with the All Union Book Chamber. According to law 15 copies of all books, periodicals, gazettes, maps etc. published in the Soviet Union should be deposited with the All-Union Book Chamber. It retains one copy as control copy and passes on the remaining 14 copies to some of the major libraries as depository copies. The control copy is kept in the archives for all times to come. The All-Union Book Chamber has presently 30 million control copies. The control copy is used for the compilation of national bibliographies of USSR in a number of series. The following are some of the national bibliographies published by the All-Union Book Chamber.

1 Knizhnaia Letopis (Book Chronicle) - Bibliography of books - excludes material less than 5 pages and issued in less than 100 copies - weekly.

2 Letopis Zhurnalnykh Statei (Chronicle of Journal Articles) - Index of articles in Soviet Periodicals - Weekly

3 Letopis Gazetnykh Statei (Chronicle of Newspaper Articles) - Monthly

4 Letopis Muzykalnoi Literartury (Chronicle of Musical Literature) - Annual

5 Kartograficheskaia Letopis (Cartographic Chronicle) - Annual

Purely ephimeral publications are excluded in the national bibliographies. The All-Union Book Chamber brings out an annual publication "Press of the USSR" (Pechat SSSR) furnishing statistical data on printing and publishing. The national bibliographies have annual cumulations too. The Ezhegodnik Knigi SSSR (Book Annual of the USSR) is a cumulation of two volumes and lists commercially available publications already reported through Knizhnaia Letopis. The entries in the bibliography are arranged according to BBK scheme of classification They provide also UDC members.

Bibliographical Card Service

VINITI has started from 1968, bibliographical card service to enable institutions and individuals to build up their own information file. Three kinds of cards i.e. 1) bibliographical card; 2) abstracts card; and 3) marginal punch abstracts card are supplied. The bibliographical card (75 x 125 mm) furnishes information such as author, title of the work, locus, UDC class No., etc. The subscriber to this service can expect to have the world literature in his special field in a minimum time. The material collected for the Referativnyi Zhurnal is used for this service. The UDC numbers help the subscriber to maintain his file in a classified sequence. At present the service is offered in Mechanical engineering (21 series) and Industrial economies (7 series). The abstracts card service furnish abstracts, annotations and bibliographical details as printed in the Referativnyi Zhurnal. The service is now available only in the subject Automation and Radioelectronics. The marginal punch abstracts card service is now offered in Metallurgy and Welding. The punch cards (207 x 147 mm) not only provide the abstracts but also microcards of the original document (up to 40 pages) mounted on it.

The Agricultural Information Institute has been presently offering abstracts card service called Kartoteka Referativ. Some 41 subjects are covered in this service. About 60 per cent of the literature covered is from foreign sources. The length of the abstracts is limited to the size of 5" x 3". The service is expected to be replaced by regular Referativnyi Zhurnal from 1969. The Central Library of the Ministry of Agriculture offers bibliographical card service for foreign literature.

The branch information institutes disseminate information through abstracts cards. This service enables organisations and enterprises to be aware of all achievements in research and development. Both published and unpublished information is disseminated through the abstracts card. Information is evaluated and significant documents are alone selected and disseminated. The abstracts card carries UDC numbers and this enables the recipients to organise their file in a classified sequence.

Reference Information Service

The All-Union information institutes have not been answering reference queries untill recently. The reference service forms more as a part of library function (Described under Readers' Services). The branch information institutes have an important responsibility for providing reference service.

The branch institutes maintain central information file in the disciplines covered by them and it is in a ready position to offer quick reference service.

VINITI's Department of Reference Information is comparatively young. It hopes to store the information collected for the Referativnyi Zhurnal through computer and make use of it for answering reference questions. It is expected that only recent literature could meet the requirements of reference service and for that matter the information collected for the Referativnyi Zhurnal will be kept in the computer store for the latest period of 3 to 4 years only.

Selective Dissemination of Information

The selective dissemination of information service of American concept is not evident though the information institutes claim that they are providing such a service. It is more a current awareness or alerting service that is provided by the information institutes. According to my observation the main feature of the SDI in matching the user profile and the current information and offering pinpointed service is not present in the services offered in the Soviet Union. However, VINITI hopes to provide soon the SDI service at least to begin with, to the staff of the Academy of Sciences. It will use the information collected for the Referativnyi Zhurnal for offering this service.

Translation Service

The translation potential in the Soviet Union is immense. The scientists generally have working knowledge of one or more foreign languages. In spite of this trend, the translation activity assumes greater importance as bulk of the scientific literature appears to them in foreign languages and they have to overcome this barrier in order to keep themselves up-to-date.

The Express Information is a step towards substitution of cover-to-cover translation efforts being made in western countries. Almost all significant articles in applied and technological fields are taken care of by the Express Information. Express Information is considered as an improvement over the cover-to-cover translation activity as only selected articles of direct interest are translated and that too only essential details are furnished through a detailed summary. There is therefore, considerable economy. Even after the Express Information, the need for translation of the residual literature is substantial.

In view of the time and cost involved in translation activity care is taken to avoid duplication of effort. The GPNTB is invested with responsibility for controlling and coordinating translation efforts. According to law, no one can undertake a fresh translation unless cleared by the GPNTB. The interested parties approach first the GPNTB which checks the availability of the translation already and grants permission only when no translation exists. For this purpose, it maintains a complete bibliographical control of translations being made in the Soviet Union. All bodies are expected to furnish a copy of the translation accomplished by them. The GPNTB processes them for use by others and maintains a master index of translations. It also compiles a semi-monthly list of translations for wider circulation. In 1967, the GPNTB has located 4, 080 translations and granted 15, 000 permissions for undertaking fresh translations.

VINITI has a Translation Bureau since 1956. As translation activity is undertaken at all levels, translation bureaux exist in individual institutions, enterprises etc. The demand for translation at VINITI is residual after the requirements are met by the local bureaux. VINITI translates from and into all European and Eastern languages and facilitates translation activity of individual organisations especially those of the Academy of Sciences. Translation into foreign languages arises out of the need to translate catalogues of equipment, machinery etc. for export and also when scientists contribute papers to international conferences. The main activity of the Translation Bureau is translation into English of the Referativnyi Zhurnal - Scientific and Technical Information series which appears in English edition also since 1966. This series of the Referativnyi Zhurnal carries 100 sheet of 25 pages or 40, 000 characters each per year. It costs 150 roubles for a printed sheet of translation from Russian to European languages. For this work the Bureau has 5 translators and 5 scientific editors in the panel, and 5 staff editors and two typists. The Bureau has a staff of 150. Editors including the incharge of the sections number about 60. The work is organised on the basis of 1) English, 2) Russian, 3) German, Slav and Scandinavian, 4) Eastern languages. The staff editors who are basically linguists are capable of undertaking translation themselves if need arises. However, the main work is carried out by a panel of 4, 000 translators mostly located at Moscow and nearby vicinity. There is need for editing the panel work but not very much as only qualified persons are enrolled as panel translators. Before enrollment they are tested and only quality translators come into the panel. They do not face any compelling need for the improvement of linguistic ability of the panel. The staff editors not only check up the panel work but also make assessment for payment to the panel. The staff editors . invite the panel workers, when necessary, to have discussions with them for offering guidance. Conferences of scientific translators are held on a town wide basis and problems of mutual importance such as methodology, organisation, techniques, training, etc. are discussed. The annual output of the Translation Bureau of VINITI is 7,000 sheets (25 pages or 40, 000 characters per sheet) or about 1, 68, 000 pages.

The Bureau of Translations of VINITI publishes every month an annotated list of translations accomplished. The list is circulated free of charge. Copies of translations can be ordered by quoting the serial-number given in the list. The Bureau of Translation has a collection of about 60, 000 translated technical articles.

METHODS AND TECHNIQUES

Classification

In the Soviet Union, the interest shown in classification as a tool for information handling is enormous. Due emphasis is given for providing classified approach to information users. In libraries, classified catalogue is commonly in vogue. It is appreciated that classification is essential for generic search of information and it has its own role to play in the organisation of information.

According to law, the information institutes are expected to adopt the Universal Decimal Classification. Till 1962, there has been no single classification scheme universally followed in the Soviet Union. UDC has been chosen now as the single scheme to be followed by the information institutes not that it is a perfect scheme without any shortcomings but because of some practical considerations. UDC is widely adopted and is international in scope and character. Its development is taken care of by an international organisation i. e. the F. I. D. It has over 110, 600 isolate terms. They use only Arabic numerals and not a mixed notation which is a helpful facility for computer application. However, it is realised that UDC in its present form has many drawbacks and it requires continuous development. When the Soviet Union decided to follow UDC, it has also taken steps simultaneously for its proper development. About 5 years ago, an Inter-agency Commission on UDC has been formed under the State Committee on Science and Technology of the Council of Ministers of USSR. Dr. A. A. Fomin has been the Chairman of this Commission since its inception. The Commission has as members more than 40 highly qualified specialists in all branches of science and technology. The first task of the Commission is to ensure that all primary periodicals provide UDC numbers to the articles carried by them. They have achieved success in this respect and more than 400 scientific and technical periodicals provide at present UDC numbers to the articles. The Commission is presently engaging itself in improving the quality of classification done at various levels. For this purpose, it has brought out a booklet on the principles of classification. To achieve uniform quality in classification work, the Commission is engaged in centralising the work in the hands of a few information institutes and libraries such as VINITI, GPNTB etc. The next task is to publish UDC tables in Russian. A complete UDC table in

Russian has been brought in 1964. The revised edition of the complete UDC will be published in 1969. An abridged edition and 12 branch tables on the various branches of national economy have also been published. The Commission has also plans to bring out an intermediary UDC table between the complete and abridged editions. The Commission enlists the support of all information institutes to achieve success in its tasks. The Commission has also done good work in the training of information specialists in UDC. It has brought out text books on UDC.

Much research work is undertaken for improvement of UDC tables. Many of the UDC divisions require continuous revision. The VINIKI is the central authority responsible for the Russian version of UDC. Other institutions work under its overall direction. It is a laboratory for undertaking studies in UDC. The GPNTB and the VINITI are responsible for the revision of divisions 5 and 6 of UDC. All suggestions with regard to the development of UDC are sent to the F.I.D. for approval and for publishing 'P' notes. Dr. Fomin is a member of the FID/CCC Committee. VINITI is collaborating with Polish and Czech counterparts in the development of UDC.

While the information institutes follow UDC according to law, the libraries are not somehow very keen in switching over to UDC. One of the reasons advanced in this connection is that UDC tables in Social Sciences and Humanities have not been adequately developed and universal libraries covering all branches of knowledge find it difficult to change over to UDC. Prior to 1960, the libraries were following either some homemade schemes or the Soviet Decimal Classification which is an adaptation of Dewey Decimal Classification. Now the major libraries such as the Lenin State Library, the Library of the Academy of Sciences, and Saltykova Shedrin State Public Library have felt the necessity to design a new scheme of classification. The three libraries have jointly designed the Bibliothechno Bibliograficheskaya Klassificatsiia (BBK) and now this scheme is widely adopted in libraries. I did not have an opportunity to study the details of the scheme. It consists of 30 parts and appears to be an enumerative scheme. It is different from Dewey Decimal Classification or Library of Congress Classification. Apparently, the scheme has bias towards Marxist Leninst school of thought. The scheme uses mixed notation over which the information specialists complain that it is an undesirable feature for computer application. However, it is clear that librarians are not generally enthusiastic about the adoption of UDC.

Mechanisation

The Department of Mechanisation and Automation of Information work of VINITI is engaged in research and developmental work on mechanisation and automation of information processes. Some of the activities are in experimental stages.

Though much attention is paid to the automation of information processes, large scale application of mechanical methods is still to be brought about. Projects like MEDLARS or MARG of the United States are not yet in sight. One of the reasons advanced in this connection is that computer technology in the Soviet Union is still in the process of development and the stage has not been reached where computers are freely available in various institutions to utilise the facility for information work.

In the Soviet Union, computer models URAL 4, URAL 14, MINSK 22, RAZDAN 5 are being used for information work. In VINITI, much theoretical work is being carried out to solve some of the problems in information retrieval. A view is held that computers are not suitable for bringing out information publications on account of drawbacks like limited number of symbols. They are therefore, more interested in automatic linotype which has unlimited use of characters and is capable of good quality printout.

For the preparation of certain indexes to the Referativnyi Zhurnal, automatic and semi-automatic methods are being employed. The abbreviated author index for certain series of Referativnyi Zhurnal are done mechanically. Bull-card punch, Bull-card verifier, Bull-card sorter and bull tabulator are used for compiling the index. They face the problem of requiring to use both Russian and Roman characters in name indexes. The Department has successfully developed machines which can simultaneously handle Russian and Roman characters. It is useful for compiling author indexes and for terminological glossaries. The Department has experimented in bringing out a glossary of geographical names in both Russian and Roman scripts. VINITI is bringing out subject index using computers to the Referativnyi Zhurnal - Scientific and Technical Information. Only key terms are used for indexing. From 1968, VINITI has started a new current awareness service called 'Signal Information'. It is a keyword in context (KWIC) index and prepared mechanically. The 'Signal Information' is available for subjects Automation, Telemechanism and Computer mechanism, Electronics and its application, Radiotechnology, Particles and Field, Electrochemistry and Electrochemical products. The Department is also experimenting on the compilation of a classified key to the Electronics Series on the Referativnyi Zhurnal by UDC numbers through the computer.

In order to eliminate the time consuming punch card methods for input of information, the Department is studying the possibility of an apparatus for reading characters. The machine can read the structural formulas also with ease and will be particularly useful for Chemistry. The Department has achieved some results but are facing theoretical and practical difficulties to put the machine into application. It is trying to overcome the difficulties.

Machine Translation

In VINITI, the Department of Machine Translation has been functioning for the last five years to conduct research on the application of machines for translation. The Department has a staff of 20 persons. The Department is engaged in studying the structure of language by mathematical linguistics. Theoretical experiments are presently being carried out on Russian language. The Department is developing models for describing the meaning of language, from the point of view of both grammar and semantics. The models built for grammatical structure are not so perfect but successful models for frequency of occurrence and lexical type have been built. What they want is to describe the properties and difficulties of a language text in terms of the frequency of construction models. In machine translation, or in any translation both easy and difficult constructions are met with. The Department is interested in tackling both. It holds the view that the Americans mostly aim to solve construction patterns which are frequent and easy. On the other hand, the Department feels that difficult and infrequent construction patterns are as important as the easy ones and have to be solved. As far as models are concerned, a perfect model should embrace both the easy and not-so-easy constructions. In VINITI's model both the difficult and the easy constructions are proposed to be solved. This is the main theoretical approach to their work so far.

VINITI's Department of Machine Translation admits that practical application of machine translation is still a distant possibility. It is not even carrying out experiments for practical machine translation as it is aware of the faults of its models. It is said that machine translation may not be an economical proposition in the Soviet Union where the need is for translation into one language only (i. e. Russian). However, it is felt that the results of their work in machine translation will be useful in information retrieval. The Department is studying the structure of Russian language, the frequency of occurrence of word groups, order of words, etc. and has achieved some results. It has also obtained some results on the morphology and syntax of Russian language. The work successfully completed so far in machine translation has been published.

Reprography

The Department of Mechanisation and Automation of Information work of VINITI looks after the design, research and developmental work in Reprography. The Department has a laboratory for this purpose. VINITI has fabricated some reprographic equipment.

1 UDM 2

It is a microfilm camera manufactured in the Soviet Union in which both perforated and unperforated 35 mm and 16 mm microfilms can be used. There are special devices to convert the numerical code assigned to the document into optical sign (the address of the document).

2 POISK

It is possible to select the relevant document from a store of microfilm quickly through this equipment. Each document is assigned a number. The POISK converts the numerical code into optical sign with the help of which the document is located quickly. A particular document in a roll of 250 m of microfilm could be retrieved in about 4 minutes. The relevant document can be screened and further copy either in microfilm or in photocopy can be had.

3 ELECTROFILM

The unit is designed for reading microfilms and making enlarged copies from the selected ones. The copies can be had on common grades of paper, tracing paper or as printing masters. Electrographic copying is employed in this equipment. Enlargement can be made upto 11 times and the maximum copy size is 210 x 297 mm. It takes about 1.5 minutes for making a single copy.

4 ELECTROPHOT

It is a table mounted electrographic machine and is designed for quick making of single copies of line images on ordinary paper and also for making offset masters. The maximum possible size of the original can be 210 x 297 mm. On one selenium plate 3 to 7 copies can be made. It takes about 1.4 minutes for making a single copy.

5 MIKROPHOT

It is a Russian made microfilm reader.

6 EKA 2

It is designed by VINITI for preparing stencil and offset plates by electric arc method. About 8-10 minutes are needed to make a plate and as many as 1,000 copies can be printed from one plate using a rotary duplicator on ordinary paper.

7 THERMOKOPIER

It is used for copying documents by thermographic method which is fast and direct.

Some of the big information institutes and libraries like VINITI, GPNTB, Lenin State Library etc. have copy-flow equipment of Rank Xerox model. They microfilm the documents first and then feed the microfilm to the Xerox equipment. It is done to get uniform size and also to overcome the difficulty of feeding bound volumes. It is also stated to be quicker than feeding the host document directly. In 7 hours, about 4,500 to 5,000 images can be taken but in VINITI, they work upto 4,000 copies daily. One selenium drum costs about £ 200 and it can last for 10,000 minutes. It is stated that 5 kopecks would be the cost of a page through this process In fact, the clientele at GPNTB and Lenin State Library are charged at this rate.

VINITI supplies microfilms of all the documents noticed in the Referativnyi Zhurnal. However, the service will be limited to the literature of last 3 or 4 years as VINITI does not store publications dated prior to this period.

Printing

My observations on printing and production are limited to information publications only and that too to the VINITI's Printing Department which alone was visited by me.

VINITI's Printing Department is situated in the outskirts of Moscow about 38 Km from VINITI. It is a very huge set up and managed by two deputy directors. The Department employs over 2,500 persons. Roughly 3,750 sheets of 25 pages or 40,000 characters each are printed every month. The Referativnyi Zhurnal is printed by linotype and the Express Information by offset process. The Department has about 20 giant printing units, which are capable of taking 16 pages at a time. The printing machines (Model PD 2 and DPN) are of Soviet make. The Department has about 60 linotype composing units and all the operations except typing the text are handled mechanically. For the offset composition Hungarian typewriter of the model 'OPTIMA' is used. It is not operated electrically. The Department has also varitypewriters of American make. They transfer the image to the printing plate through Xerox copying. The equipment Elekrophot is used for this purpose.

The Department is now experimenting on automatic linotype composition. It has one Soviet and one East German automatic linotype machine. The programming machine is like Flexowriter which punches the tape. The punched tape is then fed into the automatic linotype machine, which composes the matter in the same way as the ordinary linotype composing unit. A typist has to only control for making corrections if necessary. The automatic linotype is claimed to be speedier though costly.

Most of the operations in the Printing Department are done automatically. Collation, gathering, cutting, stapling, stitching, bundling the printed matter etc. are also done automatically in an assembly line manner. It is stated that one sheet of 25 pages or 40,000 characters costs about 33 roubles without paper and 37 roubles with paper. It is said to be an economical production.

The All-Union Book Chamber functions as an information centre for polygraphic and printing industry. A new deputy has recently been appointed to lay the foundation (possibly in 1970-71) for mechanisation of techniques and efficiency of the polygraphic industry.

TRAINING IN INFORMATION SCIENCE AND LIBRARY SCIENCE AND DOCUMENTATION LITERATURE

Training in Information Science

In the Soviet Union, training in information science is in two directions - one to train scientists in information handling and the other to train information specialists. The problem of training an adequate number of well qualified information specialists is taken care of by VINITI. VINITI runs a postgraduate course in scientific and technical information with a full time curriculum of three years (by correspondence four years) in two major areas - 1 scientific and technical information; and 2 computer techniques. About 70 postgraduates are undergoing the course at present. Only graduates with high educational qualifications are admitted on the basis of an entrance test. On successfully completing the postgraduate course, the student is entitled to receive the candidateship in technical sciences which is equivalent to Ph D in our country. In addition to passing examinations in Marxist—Leninist philosophy, foreign languages and scientific and technical information proper, the student should submit a thesis on a chosen topic and should defend it before the Scientific Board of VINITI. About 20 persons receive the 'candidateship' every year.

In addition to the postgraduate course, a special three months course is conducted for improvement of qualifications by persons already working in information institutes. About 800 persons are trained in a year. The curriculum provides for training in basic problems of scientific information. The course consists of 26 lectures, 4 practical sessions (360 hours) and excursions to important information institutes in Moscow. Some of areas covered in the course are:

1. Scientific and technical information – 8 weeks
2. Automation and mechanisation in information retrieval – 6 weeks
3. Reference work – 4 weeks.

The students are required to base their study in each of these specialities on some scientific disciplines. Such training facilities exist in the Republics also but the main centre is VINITI. The Socialistic countries avail of the VINITI's training programme to train their information workers.

Attention is also paid to the training of scientists in information handling. The users of information i.e. scientists, engineers, students etc. are taught how to make effective use of scientific information. The Moscow State University has established a Faculty in Information Science which is presided over by Prof. A.I. Mikhailov. Specialists from VINITI and other experts give lectures to the participants.

The Moscow Polygraphic Institute offers training facilities for editors of scientific and technical literature. Some of the editorial staff of VINITI had received training from this Institute.

Facilities exist, besides VINITI, at five higher establishments for training in Mechanisation and Automation of Information Process. The duration of the training is five years for full time and six years for part time. These centres train the personnel in computers, electronics, reprography, mathematics etc. which are essential for information retrieval and selection.

Training in Library Science

The Institutes of Culture are the establishments for imparting higher education in Library Science. They function under the Ministry of Culture. The USSR had no system of formal training in Library Science before the revolution, and only short courses were conducted as need arose. Lenin's wife Krupskaya took a lot of interest in libraries and at her initiative facilities for training in library science began to be provided. I had an opportunity to visit the Krupskaya Institute of Culture in Leningrad which is the earliest to be established in the Soviet Union for imparting training in Library Science. The Institute has two faculties - 1) Library Faculty and 2) Club Faculty (Recreation Centres). The Library faculty has two departments:1) Department for Preparation of

Librarians for Public Libraries which includes specialisation in children's libraries and 2) Department for Preparation of Librarians for Technical Libraries. The later department was offering correspondence course from 1958 and it was only from 1962, full time training was started.

The training is for a duration of four years. Facilities are also provided for training through correspondence and in the evening but the duration is extended to five years in these cases. Students who have finished their high school education are admitted to the course. Admission test consisting of Russian language, composition, history of USSR and a foreign language is held to select the students. Every year about 270 students are admitted to the full time course. Among them, 120 take up public library, 60 children library and 90 technical library as their specialisation. In addition the Institute offers evening courses for 150 students and correspondence courses for 600 students. At a time, there are over 7,000 students in this institute. The Library Faculty employs a staff of 150 persons. There are similar institutes at Moscow, Kharkov (Ukraine) and Ulan-Ude (Siberia). About 13,000 students graduate every year from the various library faculties in the USSR. Training in Library Science is free of charge and 80 per cent of the students receive stipend. Students who come from outstations are given hostel accommodation.

The curriculum is divided into two courses - the general course consisting of history of the USSR, the Communist party, philosophy, geography and foreign language (one language for public library and two languages for technical library). The students taking up public libraries, are given emphasis in Russian literature, literature on the people of USSR, foreign literature, Psychology and general background of natural sciences, industry and agriculture. Those who specialize in children's libraries are taught about literature and history of children's libraries. The special courses cover the historical and technical aspects of librarianship and include cataloguing, classification, service to readers, and bibliography. Some of the topics covered in public library training are:

1. General librarianship - organisation of library service in USSR - Ist year
2. Bibliographical description and alphabetical catalogue - Ist year
3. Systematic and Subject Catalogue, First Course Paper - IInd year
4. General Bibliography and Reference Service - IInd year
5. Readers Service, Handling readers, loans, exhibition, practical library work - should compile bibliography, Second Course Paper - IVth year
6. Branch Bibliography - Different branches - IVth year
7. Organisation of library work, Administration, Third Course Paper - IVth year

The students are required to work in libraries for practical training. At least a total period of five months is spent in such practical training. They are expected to maintain records of practical work. They also study a few library systems. It is stated that about 50 to 60 per cent of the time in four years is spent in studying actual library problems. It consists of in turn 60 per cent theoretical and 40 per cent laboratory and field work.

The peculiarities of training in technical libraries are:

1. Fundamental courses - fundamentals of natural sciences and techniques - 800 hours
2. Technical Bibliography (Russian and foreign). (80 hours on techniques and the rest on practical work) - 150 hours
3. Scientific and technical information - 100 hours
4. Reprography and Polygraphy - 140 hours

The students work for a total duration of five months in libraries for practical training in technical library management, cataloguing, bibliography, special library work, and regional library system.

The methods of instruction are lectures, seminars, laboratory work, and in-service training. The students are required to take up three course papers in IInd, IIIrd and IVth years. The study terminates with examinations in the final year. The final examination is conducted by a special committee of the Ministry of Culture. The Soviet system of examination is mainly oral.

A lower level of training in Library Science is provided by technical library schools numbering about 50. The training is intended for rural library personnel and for junior positions in bigger libraries. The course is of a duration of 3 years. In addition to the full time course facilities exist for evening and correspondence courses.

Numerous in-service training courses are also available for those who are already working in libraries and who want to improve their qualifications. The Lenin State Library, the Saltykov-Schedrin Public Library etc. offer such courses.

Special seminars are held in bigger libraries to offer refresher courses to practising librarians.

Facilities exist in the Institutes of Culture at Leningrad and Moscow to pursue postgraduate studies. The duration of the course is three years for full time and four years for part-time. Only those who have already obtained the diploma are admitted. The students are required to pass examinations in philosophy, foreign language and a special subject in librarianship. In addition, the students are required to submit a thesis on a selected topic based on actual research and study and should defend it before a board constituted for the purpose by the Ministry of Culture. On successfully completing the course, the student receives the Candidate of Pedagogical Science. Not more than 4 or 5 students receive the candidateship in a year. It is estimated that there will not be more than 100 candidates in the field of Library Science now.

The teachers in the library schools are men with higher educational qualifications, and have long experience in library work and teaching. Some of the teachers are Candidates of Pedagogical Sciences.

There seems to be not much unanimity among librarians and information specialists on a common programme of training. The librarians are of the view that persons who undergo training in technical libraries are capable of looking after information work. In fact, the curriculum places due emphasis to the subjects coming under the purview of information science. My discussions with the faculty members of the Leningrad Institute of Culture reveal that they are quite knowledgeable of the present developments in the field of information science. On the other hand, the information specialists (I have the opinion of Dr. A. A. Fomin) are of the view that subject knowledge is essential for information work. They hold the view that there are many shortages in library education as it places emphasis only on techniques and not on the subjects which is quite essential for efficient information service.

Documentation and Library Science Literature

The Department of Scientific and Technical Information of VINITI established in 1964, is actively engaged in disseminating information on scientific and technical information. It publishes the Referativnyi Zhurnal - Series Nauchanaya i Tekhniceskaia Informatsia (Scientific and technical information) in Russian from 1963 and in English from 1966 The series covers 500 periodicals. It is a monthly and 3, 000 abstracts are published in a year. The entries are classified by UDC. The annual subject index and monthly author index to this series are brought out by computer. The Department brings out also the Express Information on theory and practice of scientific and technical information. It appears twice a month and each issue carries 3 to 4 articles (about 100 in a year). It also publishes the Journal Nauchanaya i Tekhniceskaia Informatsia in two series - 1) organisation and methods of information service and 2) information processes and systems. The first series is intended for practicing specialists and the second one is theoretical in content. Both the series appear monthly and over 10, 000 copies are printed. In addition to the Department of Scientific and Technical Information, several other departments of VINITI, such as the Department of Scientific Methodology, the Courses of Advanced Training, the Department of Foreign Relations etc. bring out useful publications on various aspects of information work.

The GPNTB is responsible for guidance and coordination of activities of about 20, 000 technical libraries in USSR. It brings out for the last seven years a monthly periodical "Technical Libraries" Tekhnicheskie Biblioteki SSSR wherein practical problems in the management of libraries are discussed. The Library has also prepared a number of instruction manuals like list of equipment available for use in libraries, building layout for small libraries etc.

The Lenin State Library is publishing Current Bibliographical Index of Literature on Librarianship and Bibliography. It covers only local literature and appears monthly. The Lenin State Library and the Library of the Academy of Sciences bring out once a year. "Transactions (Trudii) where in theoretical questions are covered. The Lenin State Library is also in charge of the compilation of USSR Libraries Directory. The All-Union Book Chamber publishes six times a year the 'Sovetskaia Bibliografia' (Soviet Bibliography) wherein problems of bibliography and of librarianship are dealt with. The All Union State Library for Foreign Literature is responsible for publishing Russian version of Unesco Bulletin for Libraries and IFLA News. It also publishes six times a year a Bulletin on Information about Library Work and Bibliography Abroad (Bibliotekovedevice, Bibliografia Za Rubezom). The Institute of Culture, Leningrad which is one of the centres for advanced training in librarianship brings out an annual publication (Trudii) to discuss problems in Library Science engaging research and study at the Institute.

SOME CRITICAL OBSERVATIONS

The republican centres have come into existence out of necessity to fit the erstwhile information centres of economic regions into the present national system of scientific and technical information. The republican centres are therefore located not only in the republics but also in other areas which were formerly considered as economic regions. The establish ment of republican centres has not been thought of after deliberate planning. The functions of the republican centres overlap in some respects with those of the All-Union and branch institutes. In a vast country like the Soviet Union, the All-Union institutes cannot alone effectively serve and the need for regional centres to take into account the specific requirements and the peculiarities of the regions is understandable. It may be, however, worth examination whether a distinct cadre of republican information centres is at all necessary and whether the All-Union institutes cannot manage those affairs by creating its own branches as service points in the republics and in other important areas. In other words, the existing republican centres may function as branches of the All-Union institutes instead of their being a separate entity as they are now.

Coordination of information services is one of the essential features of the Soviet national system of scientific and technical information. However, according to my observations, certain amount of duplication of effort has crept in. It is not understood why the All-Union State Library for Foreign Literature should bring out the Index to foreign chemical literature and the Bulletin on Information about Library Work and Bibliography when these subjects are already covered in VINITI's services. The Libraries of the Ministries of Agriculture and the Chemical Industry are bringing out indexing periodicals devoted to foreign and domestic literature whereas the information institutes in those fields i.e. VINTISH and NITICHIM are also expected to perform such functions. It is all the more paradoxical when VINTISH and the Library of the Ministry of Agriculture have been integrated now. The All-Union Book Chamber brings out the Chronicle of Journal Articles (Letopis Zhurnalyteh Stateti) wherein Soviet periodical articles are indexed. The abstracting services of the All-Union institutes and the bibliographical periodicals of Central Libraries such as those of Agriculture and Chemical Industry are also covering the Soviet periodical literature. The Chronicle of Journal Articles is therefore a duplication at least in the fields covered by the information institutes.

It is claimed that the problems of overlapping in coverage of literature and seepage and scatter of scientific literature have been elegantly solved by VINITI by its centralised processing of world's literature. If it is so, why not extend this principle to its utmost limit by covering also subjects such as Medicine, Agriculture, Building and Architecture, Patents and Standards instead of leaving them to the care of the All-Union institutes specially created for those disciplines.

It is only from recent years, the idea of integrating the information institutes and the libraries devoted to one and the same discipline, is gaining currency. However, the GPNTB whose subject fields are common with those of VINITI has not yet been integrated with VINITI. The acquisition programmes of the GPNTB and VINITI could be unified so that economy could be achieved. However, opinion is divided as to whether the information institutes and the libraries should be united. For example in Hungary, where both of them were functioning as one unit until recently have been separated now. It is said that service libraries cannot be expected to delay the availability of new material to the readers, till such time they are held up for information processing work.

In the organisation of abstracting services centralised processing of world's literature is an essential feature. Centralisation has both advantages and disadvantages. The enormous output of literature drives the abstracting services all over the world to go in for more and more specialisation to remain within manageable limits. The same is also sought to be accomplished by VINITI by splitting the Referativnyi Zhurnal into series and subseries. However, I have my misgivings about the centralised acquisition of literature for all the series of Referativnyi Zhurnal taken together. The volume of work will go on increasing and may reach a stage where it would be difficult to manage effectively. Even now I am not sure whether VINITI is getting everything worthwhile being published in science and technology fields. The intake of 21,000 serial titles may be impressive but with regard to monographs, conference proceedings etc., scope for better coverage is perceptible.

As mentioned in the body of the report, there appears to be a liberal provision of resources to information institutes and cost factors are not given due attention. It is wondered whether many of the services that are now carried on by the information institutes can earn for their subsistence if they are to be placed on a self supporting basis. It is said that only the actual cost of physical production of information publications is sought to be recovered through subscription. This criteria may hold good in the Soviet Union where every activity is state controlled. The same cannot be applied elsewhere as the State cannot indefinitely provide subsidy to information services and at some stage, the need to place them on a self supporting basis will be insisted upon. Granting the need for state subsidy to information publications, it is a point worth consideration whether services such as VINITI's Referativnyi Zhurnal have justified their utility in relation to their cost of production. It is universally acknowledged that the information services have played a vital role in the supremacy achieved by the Soviet Union in science and technology. It may be also equally true that the impact of the Referativnyi Zhurnal on the use of foreign literature by the Soviet scientists is enormous. However, I have not come across any valid study having been made in the Soviet Union on the actual use of the information services vis a vis the investment made on them. It is true that qualitative aspects cannot be investigated in such studies but it may be possible to measure the use at least quantitatively. In this context the study made by one of the Insdoc trainees on the impact of Referativnyi Zhurnal is interesting. My casual enquiries evoked comments such as that scientists have been using the Chemical Abstracts, Biological Abstracts etc. before the advent of the Referativnyi Zhurnal and they continue to use them even now. Not that the Referativnyi Zhurnal has completely eliminated the need to consult other world abstracting services, though dependence on them may be less now.

An impression is likely to be gained at first that there is a liberal deployment of staff for information work. The Soviet administrative structure itself provides for employment of more persons and this feature reflects in the field of information too. In spite of their being mindful of achieving economy and efficiency of operation, too many persons seem to be employed. One possible reason is that the gap in the maximum and the minimum of salary grades is narrow and even by employment of more persons, the staff budget does not become essive. There is also very much less automation in the routine. I am unable to base my observations on any valid study and they are only assumptions. In the Department of Preliminary Preparation of Literature of VINITI, a staff of 105 persons is employed for a turn over of 22,000 serials, 7,000 monographs and other publications which in my opinion is excessive.

It is generally accepted that subject knowledge is essential for efficient handling of scientific information activities. The information institutes employ a large number of subject specialists in addition to utilising the services of a still larger number of specialists on a part time basis. While this may be desirable from the point of view of offering services of higher quality (with subject competence), it may be worth examining whether such a large scale employment of scientists in information work could not be a drain in the scientific manpower resources necessary for carrying out actual research and developmental programmes.

Almost all the information institutes have a methodology department. Some of them offer methodological guidance to their own internal departments while the others have responsibility for the smaller constituent units coming under their jurisdiction. In the later case more coordination work is also involved. The main purpose of the methodological departments is to standardise the existing techniques and to improve upon them for bringing about greater efficiency. Mostly problems of technical importance are handled. In a majority of the institutions, the techniques followed are more or less the same. It is wondered whether separate methodological departments in each and every establishment would at all be necessary and whether the responsibility could not be invested with one major institution only. The work being carried out in the methodological departments is of professional interest and it would be even better if professional associations (I have come across none) are associated in such matters (like the role played by American Library Association in evolving work standards).

The branch information institutes handle unpublished information. Unrestricted flow of unpublished information in all directions is assured and no element of secrecy is involved in sharing the information by others. It is said that in the Soviet patenting system, incentives to investors are guaranteed as it is realised that such incentives are necessary. It is not clear how creative and competitive spirit could be sustained if unpublished information of industrial importance is to be freely disseminated.

One of the principal aims of the Referativnyi Zhurnal is to ensure that Soviet scientists are provided access to information on the work being carried out in the other parts of the world. The Referativnyi Zhurnal may also aim to restrict the individual subscriptions to serial titles by all the research and developmental establishments with the hope that their requirements of reading material could be met by drawing upon the resources of All-Union institutes and other major libraries. If it is really so, it may be a step favourable for conserving foreign exchange but it will be definitely at the cost of providing browsing facilities necessary for the scientists to be posted with current advances in their fields.

Most of the information institutes claim that they are providing 'Selective Dissemination of Information' (SDI) services to their clientele. But on closer examination I have found them all to be some sort of current awareness services. The basic concept of SDI in matching the information and the user profile is lacking in the so called SDI services offered by information institutes.

VINITI has started from 1968, the current awareness service called the 'Signal Information' on certain selected areas. Experience has shown that current awareness services are better provided by subject specialised centres. If that be so, such services should be actually performed by branch information institutes. Unfortunately, the branch information institutes cannot offer such services as they handle mainly unpublished information.

Considerable amount of theoretical work is being carried on in VINITI and other information institutes on automation for information processing. They are very much alive to the potentiality of machine methods for information processing. But I have not come across any large scale application of machine methods for information work. Projects of the proportion of MEDLARS or MARG of the USA are not seen. It is admitted that computer technology is still in the process of development in Soviet Union and it would take some more time to freely use the computers for information work.

The arrangement of entries in the Referativnyi Zhurnal follows the scheme provided by the "Rubricator of the Abstracts Publications of the USSR". However, each entry is classified by the UDC. It is strange that the arrangement is not by the UDC numbers. Perhaps the scientists are not familiar with arrangements of subjects in UDC and it is thought necessary to follow a scheme where arrangement could be more familiar to the scientists and this is contemplated to be achieved through the 'Rubricator'.

The provision of UDC numbers to the abstracts has a very limited application. The subscribers to the service can organise the information for their personal documentation according to UDC and beyond this, no other advantage is derived. The UDC numbers are not being made use of for deriving index headings for the subject index. An impression is gained that the labour involved in classifying the literature according to UDC is not adequately compensated by the use actually being made of.

The graduate level training in Library Science is stretched over a period of four years after high school education. Due emphasis is placed on the improvement of general knowledge of the students to equip them as efficient reference librarians. However, it is worth examination if the students after mere passing the high school examination have received general education and attained maturity sufficient enough to introduce them to a higher level of training involved in preparing librarians for senior positions.

PRACTICES WORTH CONSIDERATION IN INDIA

In India, the several research establishments coming under the aegis of the Council of Scientific and Industrial Research, Atomic Energy Commission, Indian Council of Agricultural Research, Indian Council of Medical Research, The Surveys in Botany, Zoology, Geology and Anthropology and others are actively interested in scientific information services. In addition, public and private sector industries are also taking interest. As these organisations function under different administrative set up, it would be necessary to coordinate their efforts to function within the framework of a national system of scientific and technical information. Based on the pattern of the Soviet Union (i. e. The Department of Scientific and Technical Information and Propaganda of the State Committee on Science and Technology of the Council of Ministers of USSR), it would be desirable to have in our country a policy making and coordinating body at the highest level to promote scientific information services

In India, some of the elements of the Soviet national system of scientific and technical information are already present. Parallel to the All-Union institutes, the Insdoc, the National Library of Medicine, the Indian Agricultural Research Institute Library (may be designated as the National Agricultural Library in the near future) are already functioning. Insdoc has plans to establish regional centres in the different parts of the country and already one such centre functions at Bangalore. The regional centres correspond to the republican centres of the Soviet Union. The idea of establishing subject specialised centres is also gaining currency in our country. Insdoc has already worked out plans for establishing central information organisations in the fields of Electronics, Aeronautics etc. If such subject specialised centres come into existence, they will correspond to branch information institutes of the Soviet Union. Already about 800 to 1000 technical libraries and information units are functioning in our country. It would be only a task of integrating all the information agencies functioning at different levels, so as to evolve a national system of scientific and technical information.

The greatest lesson to our country from the Soviet Union is 'Coordination'. Perfect coordination among the different levels of information organisations is the guiding principle of the Soviet national system of scientific and technical information. In the field of libraries too coordination in the acquisition of material is actively practised. No efforts are spared to avoid duplication of effort. A higher body i. e. the Scientific Council on Problems of Scientific and Technical Information and Propaganda has been invested with the responsibility to supervise and guide coordination efforts. It is a common knowledge that in our country coordination of activities in the field of information and libraries is required to be vastly improved upon. It is time that some practical steps are taken in this direction. One such step may be the creation of a body similar to the one in the Soviet Union to guide and supervise the coordination efforts. Insdoc, being the national centre should be entrusted with responsibility for implementing the programmes drawn up for coordination.

The liberal provision of resources to information activities and the results obtained out of this investment in the Soviet Union, should convince our science administrators and planners of the need to provide adequate support to information services.

Scientists in general participate actively in information work and they consider it as an integral part of actual scientific pursuit. They consider this participation very useful to them as it helps them to be posted with the current literature in their fields. Such a spirit should be cultivated in our country so that the quality of our information services may improve.

The All-Union information institutes in the Soviet Union have achieved remarkable success in the centralised processing of the world's literature. This is of particular significance to the Soviet scientists on account of foreign language difficulties. Fortunately in our country, the language of science is English in which bulk of the significant literature appears. But there is definitely a need to provide access to information published in less familiar languages (to our scientists) such as Japanese and Russian. Though our scientists can know about the literature published in these languages through international abstracting services, there is a need for centralised processing (acquisition) of the literature of these languages. The National Science Library of Insdoc has plans to specialise in the acquisition of foreign language publications and this area should be taken up actively for implementation.

The Soviet Union has successfully solved the problem of handling unpublished literature. This has been possible because every establishment in that country is state-owned and no element of secrecy is involved in sharing by all concerned the unpublished information. The Soviet practice cannot be followed in our country where public and private sectors are functioning together and industries will not like to part with their technical know-how and trade secrets. However, the Soviet system of handling unpublished information has application in our country with regard to unpublished information in the field of Agriculture. It is indeed a much neglected aspect at present. Agricultural research is mainly carried out by State agencies. Numerous agricultural experimental stations all over the country generate valuable information and data arising out of their work and they remain mostly in the form of unpublished reports. Such information is often lost sight of as there is no attempt to provide bibliographical control. The problem of controlling unpublished information in Agriculture could be solved following the practice of the Soviet Union.

I understand that a clearinghouse for handling report literature has been established recently in the Soviet Union under the Department of Scientific and Technical Information and Propaganda of the State Committee on Science and Technology. I have no detailed knowledge of its objectives and functions. However, I understand that this agency will analyse and evaluate the reports of activities received from various research and development establishments. This should help the administrators and planners to take stock of the present work and to direct the future course of work. In our country, the administrative and technical reports of various establishments are expected to be scrutinised and approved by the concerned higher administrative bodies. The higher administrative bodies are many and function under several ministries. On account of this set-up, it is difficult to have an overall picture of our activities in the diverse areas of science and technology over a certain period. In this context, the Soviet idea of a federal clearinghouse for analysing and evaluating report literature should be of interest to us.

Scientists in our country generally limit their reading to English language literature. Certain amount of scientific literature in French and German languages is also likely to be consulted by them. With regard to the literature of other languages they may care to go through only particular documents (with translation) having a bearing on their work which they come to know through secondary sources. Therefore, the bulk of the foreign language literature is left unused by our scientists. In Western countries, the cover-to-cover translation activity attempts to overcome this problem to some extent. In our country too Insdoc has programmes to undertake cover to cover translations under the NSF and the Planning Commission schemes. According to my observations, the Russian method of solving the problem through Express Information has greater advantages. In the Russian Express Information not all articles in a particular journal are translated. Only the most important articles of direct and immediate interest to the national economy, selected from a large number of journals is translated and featured. Again, the entire article is not translated at length and only a detailed summary consisting of all the essential details is provided. On both the accounts, considerable economy is likely to be achieved. The coverage is also more comprehensive. It is worth experimenting in our country the Soviet attempts to disseminate foreign language literature through Express Information, in some selected areas covering at least the Russian and Japanese language scientific literature to begin with.

The information institutes in the Soviet Union bring out review publications surveying the most important developments in a given branch of science and technology. Such a state-of-art compilations help the scientists to have a bird's eye view of the present advances in their fields. In our country, no such reviews (with the exception of the Annual Review of Biochemical and allied Sciences in India) are published at present on a regular basis. It is for consideration if such reviews on our own scientific work would be worth the attempt.

Efficient bibliographical control of translations already accomplished has been established in the Soviet Union with a view to avoid duplication of translation activity. No one can undertake fresh translation unless cleared by the GPNTB which gives permission after checking the availability of the translation already. The scientific and technical translation activity in our country is not so widespread at present as in the Soviet Union and is limited to Insdoc and a few other establishments which employ full time translators. At present there is no systematic effort to collect information and store the translations accomplished all over the country. However our translation activity is bound to increase in the future and without proper bibliographical control, we are liable to duplicate the work already done. It is desirable that we initiate steps like those taken in the Soviet Union to safeguard from wasteful duplication of translation effort.

In the Soviet Union, it is considered appropirate to follow a single classification scheme for information work in order to facilitate efficient transfer and utilisation of information by all concerned. It has been possible also to centralise the classification work to a great extent. In our country too, it will contribute a great deal towards economy if we adopt a single scheme for information work. In the Conference of Information Scientists held at Mysore in 1964, such a proposal was mooted out but it is now far from being implemented.

In the Soviet Union, the training in Information Science to persons already working in information institutes is on specific areas such as Theory and Practice of Scientific and Technical Information, Reference Service, Mechanisation and Automation etc. No attempt is made to impart training in one omnibus course, all aspects of information science. Such a practice is worth consideration in our country.

Facilities exist in the Soviet Union for obtaining higher research degrees in Information Science leading to the Candidateship in Technical Sciences (equivalent to Ph.D.). VINITI has been recognised as one of the institutions to offer such facilities. It is time that such facilities are made available in our country.

The training in Library Science in the Soviet Union is broad based and intensive. In a course of 4 years, 50 to 60 per cent of the time is spent on studying the technical aspects of library management. The rest of the time is spent on general improvement of the knowledge of the students. Within the time alloted for studying library science subjects, 60 per cent of the time is spent on theory and the remaining 40 per cent on laboratory and field work. In our country where criticisms are often made that the curriculum of Library Science courses places more emphasis on the study of techniques, the pattern of the Soviet training as given above will be of interest.

Acknowledgement

I wish to express my gratitude to the Academy of Sciences USSR and the All-Union Institute for Scientific and Technical Information for giving me the opportunity to study the Soviet Information System. I am particularly grateful to Prof. A.I. Mikhailov, Director VINITI for his detailed discussions with me on the current problems in information science and to Prof. A.G. Tchakhmakhtchev, the Chief of the Foreign Relations Department, VINITI, for the excellent arrangements to make my visit enjoyable and profitable. I was received with friendliness and understanding in my visits to all the information institutes and the libraries. I owe very much to the Directors and the senior members of the staff of these institutions for the satisfaction I gained in my study and observation of the Soviet Information System.

I wish to record my grateful thanks to the Council of Scientific and Industrial Research and to Shri B.S. Kesavan, Director, Insdoc for deputing me to visit the Soviet Union under the Cultural Exchange Programme. Shri Kesavan and Shri S. Parthasarathy have provided me a lot of guidance to chalk out my programme of work in the Soviet Union and but for their help I could not have utilised this opportunity in a most fruitful manner.

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HIGHER LEVEL PROGRAMMING LANGUAGES IN INFORMATION RETRIEVAL

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INTRODUCTION

In recent years many user oriented languages have been developed for computers which have greatly enhanced the utility of computers. The fore runner of this series is FORTRAN (FORmula TRANslation) which was developed to suit the requirements of scientists and engineers. The objectives of FORTRAN are to express design and scientific problems in an algebraic language. This language is not extremely suitable to express commercial and business procedures. These procedures deal with considerable amount of character input and output and variety of files. A language was thus designed and standardized for easy use in business data processing. This language is called COBOL. (Common Business Oriented Language). Today, the problems of a documentalist are similar to those of business data processing before the advent of COBOL.

In this paper the use of FORTRAN and SNOBOL will be explored in solving a problem involving string manipulation. Two different methods of solving this problem are presented and the result shows the superiority of string oriented approach.

PROGRAMMING LANGUAGES

In defining a language a set of allowed symbols are first defined and this forms the alphabets of the language. Finite concatenation of these allowed symbols is called a 'string'. In a language only a class of combinations of such strings is allowed. These allowed strings have some meaning associated with them. The set of rules which define if a particular combination of strings in a language is allowed or not, is called the syntax of that language. Semantics is a set of rules which attribute meaning to such allowed combination of strings. This general definition of a language is applicable for the programming languages too. Designing a new language needs formulation of this syntax and the associated semantics.

Modern electronic computers invariably use two [There are computers using three symbols as alphabets; called Ternary computers.] symbols as alphabets. The main reason for choosing this binary system is that electronic devices of today work most reliably when used as two state devices. Programming with these two symbols is called the machine language and it depends on the design of the machine. Programming in such a language besides being difficult is highly machine dependent. To partially alleviate the problems symbolic programming languages were developed. They use mnemonics and make corrections in a program easier. However, these symbolic languages are also highly machine dependent as they are one to one translation of machine languages. A program written for one machine cannot be run on any other machine without modifications. Further, the thinking procedure needed to program in such languages is far from the natural thinking process. A user is forced to break up the procedure into number of minute available steps. To alleviate these drawbacks, languages closer to the natural language but with precise syntax have been developed. They are called "Higher level programming languages". Translations are written for different computers to translate the programs written in these languages into the corresponding machine language. A program written in a higher level language for one machine can be run without major changes on any other machine. In other words these languages make programming machine independent.

At present no higher level language is available which is designed specially to suit I. R. problems. Higher level languages like COBOL, COMIT have been recommended in the literature [1]. A general program for

I. R. problem is being written in any one of the available languages at present. In selecting a language for his problem one has to consider different factors like compatibility, runtime, closeness of its syntax to his thinking procedure. In the case study discussed here FORTRAN and SNOBOL were used to compare them.

A CASE STUDY

The problem chosen for this case study is a method of compressing index terms. If an index term is compressed without any loss of information the storage required to store the index term will be reduced. If one could compress and pack the information content of an index term into one memory word and matching is done in one operation the retrieval time can be reduced. The algorithm for this compression is explained below [This algorithm generates a code for an index term without any dictionary look up.].

Assume that the index term to be compressed has n (non-blank) characters and let them be denoted as

$$L_1\ L_2\ L_3\ L_4 \ldots L_n$$

The procedure is to start from the first letter L_1 and keep picking every alternate letters. Simultaneously it starts from the last letter and proceeds backwards in the same way. No repetition of a particular letter L_1 is allowed due to both forward and backward scan. Similarly no overlap of the two procedures is allowed and the number of characters in the compressed term is restricted to a minimum of six [One memory word of IBM 7044 can have six alphameric characters.]. Some examples are given below.

Example 1

DATA PROCESSING

Compressed term
DTPSIG
Forward scan   Backward scan

Example 2

COMPUTER

Overlap not allowed

Example 3

COMPUTERS

Compressed
term CMUOS

Here it should be noted that letter 'U' is not repeated due to both forward and backward selections.

The flow chart for this is given in figure 1 and the program is written in FORTRAN. There are other ways of programming the same problem but this method is chosen as it is easier to program. The same problem now is explained differently and this method will be more suitable to program with string manipulation languages like SNOBOL [2].

The approach is to form two strings (i) forward string; (ii) backward string and to concatenate them at the end. The forward string is started from left and proceeds from left to right. The backward string starts from right and proceeds towards left. In this process the extreme non-blank characters are chosen and concatenated with the respective strings. Extreme two characters are then deleted from the index term. The procedure is repeated until the string becomes null. Finally the forward and backward strings are concatenated.

Example 4: At beginning the index term COMPUTER

Forward string	(null)
Backward string	(null)

At the end of one operation

Index term MPUT
Forward string C
Backward string R

At the end of second operation

Index term	(null)
Forward string CM	
Backward string TR	

Compressed term: CMTR

The flow chart for this approach is given in figure 2. The program listings for these two are given in APPENDIX I and II respectively.

COMPARISON

When the description of the algorithm, flow chart and program listing are examined it is found that the approach with strings is simpler. FORTRAN was not designed for symbol manipulation. Specially designed symbol manipulation languages like SNOBOL are closer to the thinking procedure of a documentalist. A documentalist thinks in terms of matching two string patterns rather than substracting their codes.

On the other hand if the time taken by these two languages are compared it is found that SNOBOL is much slower than FORTRAN. The reasons for this are many. The scanning algorithm of SNOBOL[3] has a characterwise matching. In other words it is a serial operation. If matching is done in one operation (parallel mode) as in FORTRAN word operation it will be much faster. Both compile and run time have been considerably reduced in the recent versions of SNOBOL implemented in IBM system 360, computers [4].

It might look at this stage that the increased time is the price paid for the simpler syntax of SNOBOL. It is felt character oriented machines [like IBM 1620] may be more suitable for symbol manipulation which may improve this relative speed in a particular machine.

As of now FORTRAN is available universally for all machines, SNOBOL is not yet that popular. However, all the recent machines are being equipped with a SNOBOL compiler and it is hoped that it will also become an universal language in future.

REQUIREMENTS OF AN I. R. LANGUAGE

Developing a new language needs the formulation of the syntax and semantics of that language [5]. To formulate the syntax one should enumerate the basic operations needed in that field. For example in the case of FORTRAN the basic operations needed are addition, subtraction, multiplication, division and exponentiation. Similarly the operations involved in IR problems can be classified into two groups:

1 Basic pattern matching
2 Input output operations with large files.

The problem to be solved is to enumerate the different procedures involved in these two groups.

The string manipulation language used here is very close to the thinking of a documentalist and its syntax is quite simple to understand. On the other hand the run time is extremely high. In designing a new IR language an engineering compromise is to be made between easy syntax and lesser run and compile time.

CONCLUSION

The case study reveals that programming an IR problem in SNOBOL will be much simpler. However, the lack of translators for many machines and high run time are the factors inhibiting the use of SNOBOL for large scale problems. But for teaching documentalists the elements of programming the use of SNOBOL is ideal. Language is only a tool towards testing ideas and models. SNOBOL being closer to a documentalist's thinking, would relieve him from spending too much time in learning an alien computer language.

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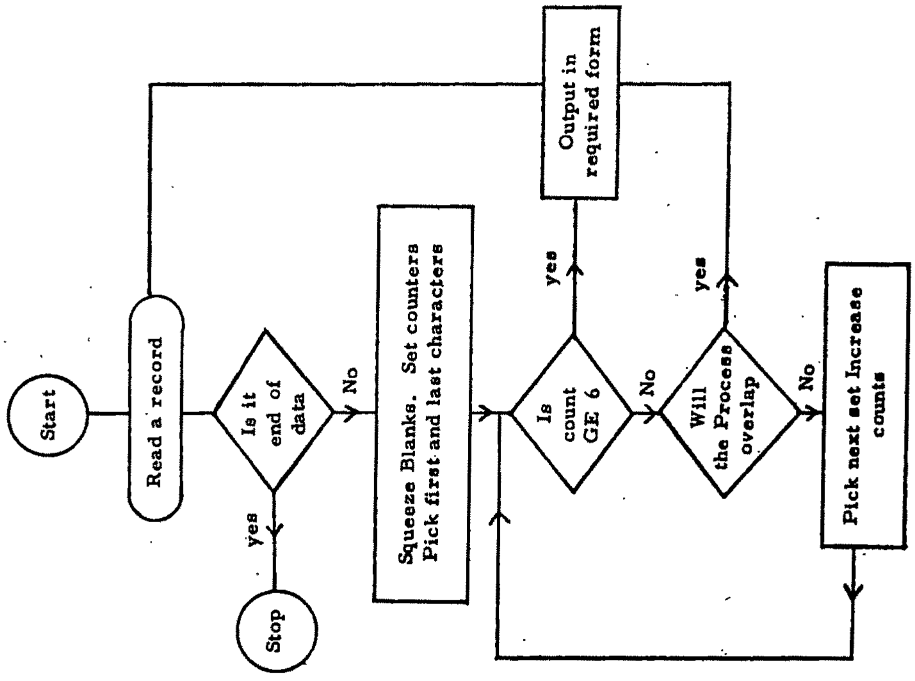
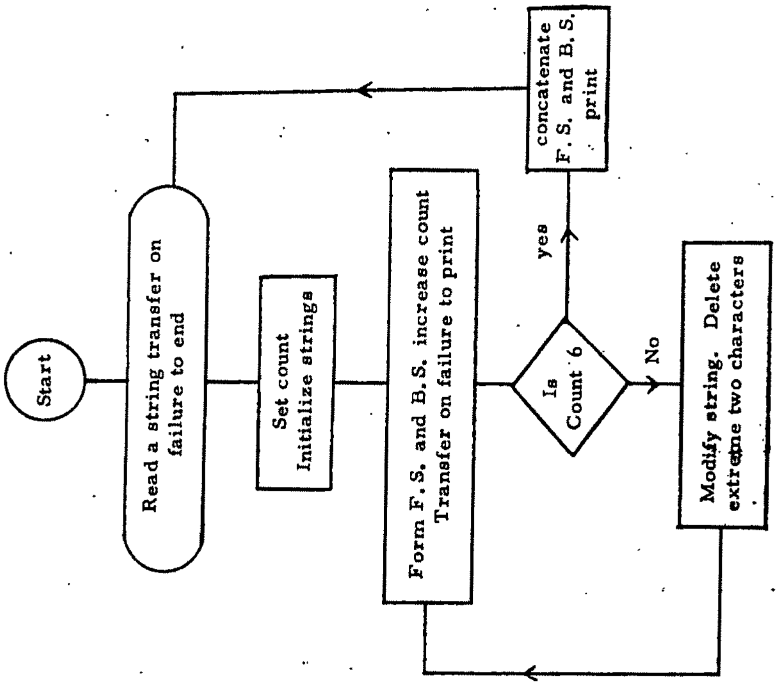


Figure 1


Start
Read a string transfer on failure to end
Set count
Initialize strings
Form F.S. and B.S. increase count
Transfer on failure to print
Is Count 6
yes
concatenate F.S. and B.S. print
No
Modify string. Delete extreme two characters

F.S. Forward string
B.S. Backward string

Figure 2

APPENDIX I

```
$JOB EEG 023,TIME 009,PAGES 090,NAME RADHA KRISHNAN
$IBJOB
$IBFTC MAIN
       DIMENSION LET(80),LSQ(30),WORD(6),NWORD(6)
       INTEGER BLANK,WORD,FIN,COUNT
       DATA BLANK/6H
       DATA MIN/6H-
       INP=5
       PRINT 140
  140  FORMAT(1H1  //40X,42HCOMPRESSED TERM TECHNIQUE FOR INDEX TERMS
  141  READ(INP,120) (LET(I),I=1,80)
  120  FORMAT(80A1)
       IF(LET(1).EQ.MIN .AND. LET(2).EQ.MIN) GO TO 990
       J=1
       N=0
       DO 130 I=1,6
  130  WORD(I)=BLANK
  100  IF(LET(J).EQ.2LANK .AND. LET(J+1).EQ.BLANK) GO TO 102
COMMENT  TWO CONSECUTIVE BLANKS INDICATE THE END OF FIELD.
       IF(LET(J).EQ.2LANK) GO TO 101
       N=N+1
       LSQ(N)=LET(J)
  101  J=J+1
       GO TO 100
COMMENT  NOW ALL EMBEDDED BLANKS ARE SQUEEZED.
  102  WORD(1)=LSQ(1)
       WORD(6)=LSQ(N)
       IST=1
       FIN=N
COMMENT  IST AND FIN ARE FORWARD AND BACKWARD COUNTS.
       I=1
       J=6
       COUNT=2
COMMENT  THE ARRAY WORD CONTAINS THE REQUIRED CHARACTERS.
  103  IF(COUNT .GE. 6) GO TO 116
       IST=IST+2
       FIN=FIN-2
       IF(FIN-IST) 116,104,105
  104  I=I+1
       WORD(I)=LSQ(IST)
       GO TO 116
  105  I=I+1
       COUNT=COUNT+1
       WORD(I)=LSQ(IST)
       IF(I.LE.J) GO TO 116
       J=J-1
       IF(J .LE.I) GO TO 116
       WORD(J)=LSQ(FIN)
       COUNT=COUNT+1
       GO TO 103
  116  DO 107 L=1,6
  107  NWORD(L)=BLANK
       LC=0
       DO 108 L=1,6
       IF(WORD(L).EQ.BLANK) GO TO 108
       LC=LC+1
       NWORD(LC)=WOR4(L)
  108  CONTINUE
COMMENT  BLANKS IN THE COMPRESSED TERM ARE NOW RIGHT JUSTIFIED.
       PRINT 109,(LET(I),I=1,30),NWORD
  109  FORMAT(50X,30A1,3X,3H---,3X,6A1)
       GO TO 141
  990  STOP

       END
```

TIME TAKEN TO PROCESS 223 TERMS = X 59 Seconds.

(This includes both compile and run times)

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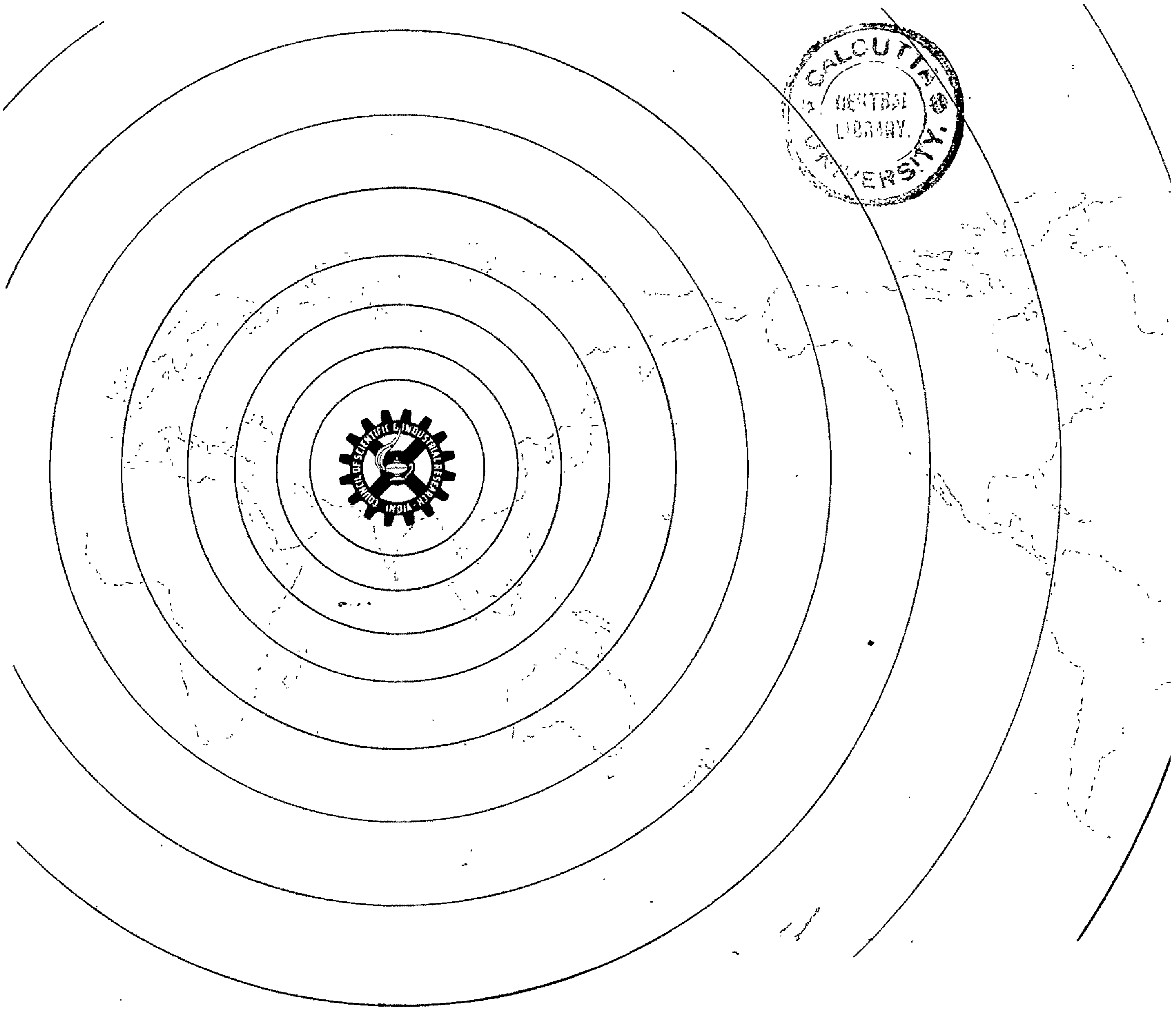

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Paul Otlet *J. Delville pinx*
[Reproduced from Rev. Doc., 1954, 21(3)]

EDITORIAL: HOMAGE TO PAUL OTLET (1868-1944)

We join the librarians, documentalists, and bibliographers all over the world in paying our respectful homage to the memory of Paul Otlet, in the centenary year of his birth. Once Paul Otlet is said to have remarked that the strength and vitality of the FID and UDC depended on a large number of 'amis inconnus' throughout the world. We are proud to call ourselves as belonging to this large and growing fraternity of 'amis inconnus', with faith and deep respects for the FID and the UDC and the philosophy and ideals for which they stand.

As we look back, the year 1892 stands out as a fateful year. Bibliography attracted the attention of Paul Otlet, a lawyer by profession, whose course of life was changed to a considerable extent by Bibliography and who in turn changed the course of Bibliography to an even greater extent. It was in 1892 that Otlet published an article on bibliographical problems in the social sciences, which immediately attracted the attention of Henri La Fontaine, another Brussels lawyer who had already done some spadework in the field. They met at the rue de Florence, Otlet's home, and the mutual attraction blossomed into a life-long bibliographic partnership and what transpired at this historic meeting soon snowballed itself into a global movement. After this meeting Otlet and La Fontaine were to be seen together and these two names were to be associated with many a great bibliographical ventures.

With the support of the Belgian Government Otlet and La Fontaine started an International Office of Sociological Bibliography, in 1893, the working of which gave them a deeper insight into the problems of bibliographical control and organisation. With this rich experience, firm faith and conviction in international cooperation, and having in mind something of the nature of a clearinghouse of bibliographic information with the support of a classified international catalogue and a rich library collection, they convened the Brussels international conference in 1895. The direct outcome of the conference was the establishment of the Institut International de Bibliographie, sanction for the adaptation of the Dewey Decimal Classification System, and recommendation for the preparation of a Repertoire Bibliographique Universal, the last mentioned of which is now defunct but the subsequent story of the other two is well known to all of us.

It has been observed that the all round enthusiasm and interest that was evinced during the Brussels conference and immediately after it, when the plans, purposes, and methods of operation of the Institut were known, has hardly any parallel in the history of bibliography and documentation. It is said that after the Brussels conference one could be either a complete believer in the ideals of the Institut or a critic of it, there was hardly any middle path. Surely, this is a measure of the deep impression that the two pioneers Otlet and La Fontaine were able to create in the then bibliographical world and also an evidence of the congenial atmosphere that was created in which international effort in bibliography could thrive and prosper.

The changes in the name of the Brussels Institute from International Institute of Bibliography to International Institute of Documentation, in 1931, and again to International Federation for Documentation, in 1937, were not mere trifling with names, but were of profound significance. The first change was a clear indication of the passing of the old order, giving place to the new order of bibliography, 'more extended in its purpose, more realistic and dynamic in outlook, and more rapid in its advance', which came to be designated as documentation. The second change in name, again, signifies the realisation of the fact that international bibliography could prosper and advance only through a federal type of organisation, implying thereby the existence of strong units of national organisations. The point we want to make is that Otlet and La Fontaine lived and worked to guide bibliography to its new course during those eventful years in the eddies of which many were caught distressingly floundering. Only they were able to rise much above and see bibliography in its total and changing form.

Even with the above changes of far reaching character, critics have held that the Institute was severally centralised both in its concept and operations. Perhaps, it was so. But the present generation of documentalists, who have before them a better perspective, will realise and appreciate two important points in one of this biggest ever attempts in international intellectual cooperation. Firstly, everything that Otlet proposed or planned was of international character and scope. He planned an international university and library, a museum, a universal city and even expressed his premonition for the formation of a body like the Unesco. Internationalism was a firm conviction in him. No wonder, the agency that he had planned and set up for the bibliographical organisation too had an international character. Unfortunately, very few are gifted with a frame of mind and vision to grasp and visualise things in such a broad and global context. Secondly, the widespread distrust in centralisation in any form was to a very large extent the consequence of the sad and bitter experiences of the first World War, the tarnishing effect of which permeated to a number of international cooperative ventures and had completely paralysed some of them. But in spite of this stress and turmoil, it has been admitted that 'the body which did most to maintain focus on international organisation of bibliography, particularly during the thirties, was the resusciated Brussels Institute'.

With the passing away of Otlet in 1944, an era in bibliography came to a close. Otlet died only one year after his bibliographic partner La Fontaine and just two years before the formation of Unesco, which body was to open a new chapter in all branches of international intellectual cooperation.

Perhaps the richest tributes to the work of Otlet and La Fontaine were paid by Donker Duyvis, one of the most devoted disciples, in a few gracefully simple and yet profound words. He said in 1940 that they "created a lasting spiritual background for the present international organisation of documentation."

B. Guha
Associate Editor

USERS' SURVEY CONCERNING TEACHERS AND RESEARCH SCHOLARS IN THE DEPARTMENT OF CHEMISTRY, UNIVERSITY OF DELHI

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This is a survey report of the users needs study of the Dept. of Chemistry of the Delhi University, which comprises of forty teachers and seventy research fellows. The survey was conducted through questionnaire and interviews. Interesting patterns about the reading havits, types of publications used, information requirements, mode of information gathering, role of personal collections, etc of the respondents are revealed by the analysed data. It has been observed that quite a large percentage of research fellows do not use the library as much as they ought to. The majority of the researchers (71%) feel the need to improve their skill in the use of science-technology literature. The author suggests the creation of a post of documentation officer, in the Department, to provide help in literature search and dissemination of information. This could be done by spending only .7% of the total budget of the Department.

INTRODUCTION

The library, its devices and operations aim to serve the needs and demands of clientele served by it. It is, thus, clear that the librarian must know his users in order to be able to serve them effectively. The present survey is an attempt in this direction.

The purposes of the study can be categorised as:

(1) To know what are the information requirements of a user

(2) How does he obtain information and keep track of the latest ideas

(3) What needs to be done to make effective use of the library resources/ services

(4) How the programme of training of librarians can be adapted to meet the requirements of the research scholar

Method

The questionnaire (See Appendix I) was circulated amongst the teachers and research workers of the Department of Chemistry, University of Delhi and they were later interviewed on the basis of a set of five questions included in the questionnaire. The filled up questionnaire was got back at the time of the interview. The data got thus analysed and the conclusions were deduced.

Here we are concerned with a group of scientists using a university and a departmental library. The Department under consideration has forty teachers and seventy research fellows. Out of these, eighteen teachers, nine senior research fellows, and thirty-eight junior research fellows filled in the questionnaire, that is a fifty-nine per cent return. Besides this there were four persons who were interviewed but did not fill the questionnaire.

Background of the researchers and the Department

The University of Delhi is a teaching as well as an affiliating university. The research in the field of Chemistry is done at the Department of Chemistry. This Department, one of the largest in the University of Delhi, provides facilities for training and research in all the three major branches of Chemistry, viz. Organic, Inorganic and Physical Chemistry. There is also an Advance Centre (started in 1963/64) located in the Department. In the field of Organic Chemistry, intensive studies are made in the area of Chemistry of Natural Products at this Centre.

The research scholars of our concern here usually get some sort of fellowship or scholarship. These belong to categories as given below:

(1) CSIR junior or senior fellowships
(2) U.G.C. junior or senior fellowships
(3) PL 480 grants
(4) ICMR junior or senior fellowships
(5) University scholarships.

Library facilities in existence

The material of interest to chemists is located in the University Library and the Departmental Library. One senior Professor supervizes the Departmental Library which is looked after by an attendant. The Departmental Library contains material purchased under Advance Centre fund (there is a separate fund under this head), and other material asked for by the Department for transfer from the University Library. All the material is purchased and processed at the University Library; material purchased under Advance Centre fund is sent to the Departmental Library after processing and besides that Delhi University Library also transfers other material asked for by the Department.

Materials

The University Library at present subscribes to one hundred and eighty-two periodicals in Chemistry, plus forty-two periodicals under the Advance Centre fund. These forty-two periodicals are transferred to the Departmental Library as soon as they are received. Along with these are also transferred some other periodicals, for which special request is to be made by the Department. This amounts to temporary loan. The second group of periodicals consists of those which are of immediate need to the Department.

Dr. White in his 1965 survey [1] noted that the University/Departmental Library had twenty-six per cent of reference collection in science measured in terms of Winchell's Guide to reference books (7th edn. with supplements). Further he found that the library was getting forty-four per cent of essential and fourteen per cent of desirable periodicals as classified by the researchers themselves in the field of Chemistry. He also studied the strength of book collection in Chemistry in terms of selected book lists and he found that only twenty-seven per cent of the titles were available in the University/Departmental Library. The situation with regard to reference books, other books, and periodicals has not changed very much since then because no special project of acquisition has been taken up as yet.

Services

The Departmental Library maintains a collection, and issues material to those who are connected with the Department. Beyond this, it does not provide any service. It maintains a catalogue of holdings of books, which contains only author entries.

The important services provided by the University Library are: Issuing and reservation of books and periodicals, reference service, and inter-library loan. The library catalogue in the University Library is a classified catalogue with alphabetical index; it also contains information about books in the Departmental Library. Bound volumes of periodicals are issued to teachers and research scholars for fourteen days. The loose issues of periodicals are issued to teachers only, the loan period being fourteen days. The current weeklies and fortnightlies are not issued till the next issue has been received in the library. Monthlies, quarterlies, and annuals are displayed in the periodical section for three weeks and these are issued only after this period is over. The maximum number of books/bound volumes of periodicals which can be issued to a teacher or a research scholar is six. The books are issued for one month.

INFORMATION REQUIREMENTS

On analysis of the first part of the questionnaire the following points, regarding amount of information, kind of information, etc. become obvious.

Amount of Information

(1) Scholars engaged in theoretical areas feel less need for information.

(2) The same was the situation, if the area of research was totally new.

(3) In majority of cases it was found that the need for information was maximum in the beginning, less during the project, and again much more at the time of the finalization of the project.

(4) Number of references needed to be consulted is greater, if one has to select the problem oneself or when it is an extension of an old problem.

Thus the information required depends on the nature of work or topic being pursued and the amount varies from one stage to another, though in some cases it may not vary much.

Kind of Information

Information is required for research and teaching. In the beginning, Chemists try to have an exhaustive search to find past literature on what others have done in the subject and allied areas. (Some of them continue exhaustive search along with the project. This may be true because few of them are able to make exhaustive search before they start.) They also search for background information in the beginning.

During the project, mostly, they are required to keep track of what is being done in the field of their interest. Occasionally, there will be need to verify details of an experiment.

At the end, in the writing of thesis or an article by a researcher, he needs to fill gaps. He also needs to reascertain whether the work is relevant or not.

Purpose of the use of various types of publications

The respondents mentioned the use of various types of publications as follows:

Books: For techniques, basic needs, general reading and reading in the allied areas, fundamental ideas, sometimes for past work, comprehensive information. Mostly these are used for background information.

Monographs (Books) : Books on specialised topics for experimental data.

Reference-books: For techniques, instrumentation (details of procedure), reactions, established facts, general ideas, background information for spectra.

Text-books: Very important for background information.

Handbooks: Used for immediate information.

Abstracts: To keep abreast. To find what has been done and is being done. For latest information. To get data, reactions. To compile a bibliography. To get exhaustive information. Chemical abstracts tells us what we might have missed otherwise in current journals. To lead to original articles. Some suggested most of the time the abstract is sufficient for their purpose.

Journals: For latest information. To keep track of current papers. To know what is being done and has been done by others.

Advances in — and Progress in — including Literature surveys and reviews: To know how much work has been done. For literature of earlier period. For consolidated information. To get background information.

Thesis: Consulted much, specially if the given work is an extension of a previous work done at the University.

Literature guide: Nobody uses them.

Research reports: To know what work is being done by others and to get information about the work in progress or completed.

Consultation of subjects other than Chemistry

Table 1

Number of persons who had to consult

	T	S	J
Mathematics	5	-	4
Physics	7	1	1
Electronics	1	-	-
Spectroscopy	1	-	-
Biochemistry	1	1	5
Botany	3	3	10
Zoology	-	1	-
History of Science	1	-	-
General Science	-	1	-
Pharmaceutical Chemistry	-	1	-
Pharmacology	-	1	-
Biology	-	-	1
Soil and Clay Science	-	-	1
Geology	-	-	1

Key to abbreviations: T for teachers; S for Senior Research Fellows (those who are doing post-doctoral research); and J for Junior research fellows.

The term 'resercher' has been used to indicate all categories taken together.

Total number of persons who had to consult outside the field of Chemistry was 41. It may be noted that some of the researchers had to consult more than two subjects.

Table 2

	Number of persons who filled the questionnaire	Number of persons who have to consult outside Chemistry	Percentage of persons who have to consult outside Chemistry
T	18	12	67
S	9	5	56
J	38	24	63

Weighted percentage = 63

The above tables show the variety of subjects which have to be consulted by a researcher. Sixty-three per cent of the researchers need to consult outside the field of Chemistry. Thus, their information requirements are varied in nature and extend into many areas of natural sciences.

Able to keep up or note

Of the forty-eight persons who answered this question, twenty-two persons mentioned that they were able to keep up. Eight persons mentioned that they were able to keep up to a certain extent. Eighteen persons indicated that they were not able to keep up.

Major difficulties is not being able to keep up

(i) Literature is very vast. Through abstracts, indexes, reviews, and literature surveys one may be able to decide what to read or not, one may be able to keep track of what is going on but one can never be sure of being able to read every thing of significance in the field because one might have missed something useful. Besides, one may not be able to read as much as one would like to due to lack of time.

(ii) Much literature is published in languages other than English. In this regard, Japanese creates a special problem. In actual practice, most of the researchers totally depend on the Chemical Abstracts to know what is useful or not. They try to manage with Chemical Abstracts only without going to the original sources.

(iii) Those working with one of the Professors are lucky because he normally gets the important journals and his students get the information quickly through him. Those working with him are in a better position to be able to keep up with the literature being published. They have the advantage in that the Professor scans for them and tells them what a particular researcher must read. Some of the researchers mentioned that they read what is received in the Departmental Library.

(iv) Abstracts come late, e.g. it was believed that Chemical abstracts is late by one year i.e. the time gap between the date of its publication and publication of original article in the periodical. Also journals do not arrive in time because they come by sea mail.

(v) There is a scattering of journals. Some are in the Departmental Library, some are in the University Library and others may be with teachers or other users.

(vi) Many of the journals required by the researchers are not being subscribed to by the Library.

(vii) It might be noted here that a number of researchers mentioned that one can only try but nobody can say definitely that one is able to keep track.

GETTING THE INFORMATION

How they get information

Those who work with one of the Professors are privileged because they get from him typed copies of abstracts or extracts of articles. They may even get access to the periodicals directly. Other research guides may provide guidance occasionally as to what to read.

The majority of the researchers consult the abstracting and indexing journals regularly and go to the original article only if the need arises. Chemical abstracts along with Current chemical papers and Index chemicus is the main source of information. Besides, they may look into certain journals in their area regularly and just scan others. When the original article is not readily available, it is obtained from a local library on personal basis. Sometimes a reprint may be obtained by writing to the author. It was found that if the problem is about reactions they go to Chemical abstracts. One person believes that scanning of periodicals is better than going through the Chemical abstracts but scanning does not give full satisfaction because one might miss something useful. A few persons mentioned that they look into journals either directly or via Chemical abstracts and used cited references for related readings.

They also received information by talking to senior students or colleagues within the Department or occasionally through contacts outside the Department (e.g. one person mentioned that his friend from the Department of Zoology helped him about the relevant readings in Zoology). Communicating with others doing research in the same field is extremely useful. Attending conferences was not found very helpful. Discussion in small groups at local level was, however, found to be very helpful.

In the Department colloquiums are organised where the research scholars present their findings. These colloquiums appear to be a useful method for the exchange of information, because one learns so much from discussions. Every afternoon, the Professor may hold a meeting with his group of research scholars to review their research problems.

In a certain instance, the research project may be an extension of the previous work done. As such a few mentioned that earlier theses completed in this university were very helpful. Some also mentioned visiting laboratories to be of great service.

By talking to researchers and library staff at the university library, it was confirmed that the researchers usually do not seek assistance from the library except to find a specific book or periodical. The reluctance arises from the fact that they do not trust the capacity of the library staff to comprehend their needs for information, though sometimes they may ask for the help of the library staff for understanding the use of tools like indexes, abstracts, or the library catalogue.

Thus, the following methods of obtaining information are being employed by the researchers under study:

(1) laboratory experimentation;
(2) consultation of published literature;
(3) consultation with a colleague or a guide
(4) attendance at the departmental colloquium, meetings, conferences, seminars, etc.;
(5) communications with others through correspondence; and
(6) visits to laboratories.

The researchers under consideration employ the first three channels frequently. The third is very helpful in day-to-day approach. Some regard the fourth of doubtful value except the departmental colloquium. The fifth is not used very much except for obtaining reprints. The sixth is thought to be very helpful but is not much practised here. The first is regarded as the most important. In certain cases this may take the form of experimental research, theoretical research or both depending on the nature of the problem in hand.

Time spent in reading and in the laboratory

Table 3

Number of persons who filled the questionnaire		Number of persons who replied to this question	Average time spent per week on reading in their field (hours)	Average time spent per week in the laboratory (hours)
T	18	18	17	41
S	9	9	12	50
J	38	38	14	48
	Weighted average		14 hours	46 hours

Average time spent in research work per week is 60 hours.

The average time spent in research work as given above is simply not true because it was found that, at the time when the experiment was going on, it did not need constant attention. As such the researcher was in a position to read in the laboratory itself. Even otherwise it was observed that researchers preferred to read in the laboratory than in the library because of convenience. It can be said that a researcher spent on an average more than three times the time in the laboratory as compared with the time spent in reading. Voigt [2] found average time spent per week by an average chemist was twelve hours. This compares favourably with our results. The figures show that teachers spend more time in reading than others. On the other hand, research fellows spend more time in the laboratory than the teachers.

Table 4

Time spent in reading

Number of hours per week	Number of persons T(18)*	S(9)	J(36)
2	-	-	2
4	-	1	2
6	1	1	4
8	1	-	3
10	3	2	6
12	1	-	3
14	3	2	4
16	2	1	3
18	-	-	2
20	1	2	3
22	1	-	-
24	-	-	-
26	2	-	-
28	2	-	-
36	1	-	-
40	-	-	1
46	-	-	1
48	-	-	1
50	-	-	1

* The numbers within parentheses in Table 4 and rest of the tables indicate the number of persons who provided information regarding the given item, unless indicated otherwise.

The above table indicates that majority of research scholars and teachers spend between six to twenty hours per week in reading. It seems thirty-three per cent of teachers spend more time than twenty hours per week. On the other hand, only nine per cent of the research scholars spend twenty-two hours or more in reading. It might be noted that no senior research fellow spends more than twenty hours in reading.

Table 5

Time spent in reading and in the laboratory

Number of hours spent per week	Number of persons T(18)	S(9)	J(36)
0	1	-	-
4	-	-	1
8	-	-	1
12	-	-	1
16	1	-	-
20	-	1	1
28	1	-	-
32	2	1	-
36	2	-	1
40	3	-	1
44	2	-	2
48	3	2	3
52	2	-	11
56	-	3	4
60	-	1	5
64	-	-	1
72	1	-	3
80	-	1	-
100	-	-	1

The majority of the teachers spend forty-eight hours or less per week in the laboratory. On the other hand, majority of research fellows spend forth-eight hours or more per week in the laboratory. It need be mentioned that the time spent in the laboratory may include the time spent in reading, doing experiment, in guiding the research scholars and students (this is true in case of teachers) and discussing research problems with colleagues. May be if a person takes his lunch in the laboratory, he is supposed to be present in the laboratory.

Amount and frequency of reading done at home

Table 6

Average time spent in reading per week at home

Number of hours	T	13(12)**
	S	11(6)
	J	6(28)

Table 7

		Number of persons who replied to this question	Frequency			Frequency		
			Daily	Four times	Three times	Two times	Once a week	Quite often
Number of persons	T	15	14	-	-	-	-	1(15)
	S	6	5	-	-	1(6)	-	-
	J	28	22	1(23)*	4(27)	-	1(28)	-

The figures within parentheses in Table 6 indicate the number of persons in each category who supplied information.

The figures within parentheses in Table 7 indicate cmulative totals.

It may be noted that some of the persons who supplied information about the frequency of reading at home, were not able to indicate time spent in reading.

T: We can see that all teachers except one read daily at home. The average time spent in reading being thirteen hours per week.

S: Except for one, others read daily and spend eleven hours per week on average.

J: They spend less time in reading at home as compared with other two categories. On the other hand, they spend more time, on average, in the laboratory (see table 5). Seventy-nine per cent of them still read daily at home.

Reading en route between home and Department

One teacher mentioned that he rarely read in the bus. Three senior research fellows mentioned that they read about one hour daily. Two junior research fellows did read en route; out of these one indicated that he spends less than one hour per day. By talking, it appears, they were inclined to read light literature en route.

Role of personal collections

One of the Professors is a fellow of many leading societies and editor of several journals. Hence, he gets complimentary copies of various publications and as such he has built up a huge collection of his own in the field of his interest which is organic chemistry of natural products. This collection is, however available for use to researchers in the Department.

Similarly, two other Professors have good personal collection to which also researchers have easy access. Another teacher has a large collection of reprints in the field of quantum chemistry. The teachers, who have studied in the United States possess personal collections which they built up while they were there. Such collections are of immense use to them for their immediate needs.

Membership of a professional society

Table 8

	Number of persons as members			Percentage of persons as members			Weighted average (per cent)
	T(18)	S(9)	J(38)	T(18)	S(9)	J(38)	
Indian	8	1	5	42	11	13	22
Foreign	4	0	1	21	0	3	8
Indian or Foreign	8	1	6	42	11	16	23

The above table shows that twenty-three per cent of the researchers are members of a professional society. Only eight per cent of them are members of any foreign professional societies.

T: Eight persons are members of professional societies. Everyone of them is a member of Indian Chemical Society. Out of these, two are members of the Indian Science Congress. One is a member of Indian Biological Society. Three are fellows of the Royal Institute of Chemistry.

S: Only one person is a member of the Indian Chemical Society and the Institute of Chemists (India). None of them is a member of a foreign society.

J: One person is a fellow of the Chemical Society (London). Two are members of the Chemical Society, University of Delhi.

Implications: If the researcher is a member of a professional society, in that case he is likely to get some of the publications which may lead to less dependence on the library for the consultation of material.

Number of scientific journals subscribed

Table 9

	Number of persons who filled the questionnaire	Number of persons who subscribed to: Indian journals	Foreign journals	Number of journals subscribed to: Indian journals	Foreign journals
T	18	6	4	10	11
S	9	-	-	-	-
J	38	3	1	7	6
Total	65	9	5	17	17

The number of teachers who subscribe to scientific journals is much larger than others. Apparently, no senior research fellow subscribes to any journal. It may be noted that persons working in the inorganic laboratory collectively subscribe to three foreign and three Indian journals.

Pattern of use of literature

It was observed that researchers work in groups. A typical group consists of a Professor, two or three other teachers, and four or five research scholars. Such a group has a common area of research. The following group patterns of literature use were observed:

(a) The first pattern is that a group includes a senior Professor who reads literature extensively (may be he does not actually work in the laboratory) and indicates to the research scholars what exactly to read. As a typical case, it might be mentioned, one Professor goes through Chemical abstracts, Current chemical papers, and other leading journals in the field of interest and marks the items of interest with the initials of the names of the scholars to whom it might be of interest. Later these marked items are circulated to the scholars. Sometimes he gets certain items of information (e.g. abstracts) typed and sends them to those who have to read them. In such a case, researchers in the group are dependent on the Professor for literature in their field.

(b) The second pattern is that a group consists of those who do literature search on their own, and get guidance from their senior teachers or colleagues about experimental procedures only. The most used sources are Chemical abstracts and Current chemical papers.

(c) Third group includes those who say that they do not have to do much of literature search. The reason could be the non-existence of sufficient literature in their own field of narrow speciality or it might be that the area was totally new or there might be some other reason like the follow up of work done previously.

(d) Those whose work is of interdisciplinary nature occasionally depend on their colleagues and friends in other areas, who indicate to them what to read in other areas outside their speciality.

Comments

It is apparent that learning about literature from colleagues is important in all these patterns. It might be noted that these patterns of use have certain implications for the library. For group (a) the library has to take special care to serve the needs of the Professor. In such a case he would like to get everything of interest to him (i. e. as well his group) immediately and possibly he would be able to manage to do so. People belonging to his group would be served better. Most of the journals they require would be available in the library.

Group (b) is not likely to be served as well as (a) from the point of collection. In certain cases, the number of journals available in the library would be insufficient to meet the demands of researchers. The periodicals now being received by the library have been selected by senior Professors; in certain cases they may not have taken into consideration the specialized needs of individual research scholars. Therefore, such persons are likely to be neglected unless attached to a senior Professor.

Group (c) has its own problems. They may not know what they are missing. It is just possible that they may not be familiar with the existence of literature. All the same, their research needs in terms of literature are more limited than in other areas.

It was noticed during the interviews that if an item in which a researcher is interested is not available in the library, he tries to get it from a local library. In most cases, if the researchers are not able to get it from the local library, they try to manage without it. This means either they are lazy (!) or they do not know how to get information from outside Delhi or they do not want it very intensely.

Number of Scientific journals read and scanned regularly

TABLE 10

	Number of persons who filled the questionnaire	Number of persons who replied specifically to the question of reading regularly	Average number of periodicals read regularly		
			Indian	Foreign	Weighted Average
T	18	13	2.5	6	4
S	9	7	4	6	5
J	38	24	3	5	4

	Number of persons who filled the questionnaire	Number of persons who replied specifically to the question of scanning regularly	Average number of periodicals scanned regularly		
			Indian	Foreign	Weighted Average
T	18	8	2.5	7.5	5
S	9	3	1	3	2
J	38	17	3	5	4

The ratio between the average number of Indian and foreign periodicals consulted regularly is of the order of one to two. The same ratio is maintained for the number of periodicals scanned regularly. The average number of periodicals read regularly is somewhat the same for three categories of users. Teachers and junior research fellows read and scan almost the same number of periodicals.

Some of the researchers could not give a definite reply about their habit of reading and scanning of periodicals. Some of the replies are given below:

The number of periodicals read and scanned varies depending on the time available and the problem in hand at that time. Those persons working under the guidance of professors are guided in their readings by them. Such persons do less of reading and scanning regularly as compared to others. One mentioned that reading and scanning go side by side. Three persons indicated that they read all the periodicals subscribed to by the Departmental and University Libraries in the field of their interest.

Problems regarding translation

Below we shall discuss the problems and some of their solutions, including the ones which are being used by the Chemical scientists under study here.

While consulting Chemical abstracts a researcher may come across an article in a foreign language (other than English), then in most cases the Chemical abstracts would provide sufficient information so that he would not have to consult the original article. If the need arises (when he does not know the language) he would ask one of his colleagues or teachers in his laboratory or in the Department to translate or to read out the translation. In case the language is other than French or Russian or German, then he might write to INSDOC to get a translation. If it is Japanese or a less known language even INSDOC may show its inability. In that case some people would request the local embassy to arrange for the translation. Some of those who have tried INSDOC indicated that its service was very slow, to the extent by the time translation would be available, the research worker would no longer be interested in the information.

The problem of translation has been solved to some extent by the cover-to-cover translations done by American agencies but this has been mostly done from Russian. It might be added here that it is not a big problem to get a Russian translation.

Some people have overcome the language problem in the following way: One teacher showed me an article in Spanish and said that he was able to understand the relevant portion even without knowing the language. This is possible because Chemistry uses a lot of symbols and these symbols are universal. Therefore, even with a little bit of the knowledge of a foreign language one can understand the contents of articles to the extent to be able to get along.

It was suggested again and again by researchers that the library should employ full-time translators and they should be able to get translations on nominal charges or the Department should pay for the translation. Another suggestion was that the wives of the University teachers on the campus should be encouraged to learn foreign languages and do the translation work for researchers on deamnd against payment.

It was also suggested that the University Library on its part could maintain liaison with a panel of translators. A few suggested that translation cells could be set up in the European and other language departments of the University and students studying there could be encouraged to do this work on payment.

It was noted that some research scholars mentioned that at present they were not encouraged to learn foreign languages because the senior teachers, who are advisers, feel that the time of research scholars is important and they should not waste their time in learning languages. Many persons felt that each Ph. D. student should be asked to learn two foreign languages.

The development of translation facilities in INSDOC and elsewhere to the extent to be able to provide prompt service will take some time, till that time some solution has to be found. I believe the problem has to be attacked from different angles. The suggestions are given below:

(a) Some people in the laboratories could be encouraged to learn languages like Chinese, Japanese and Czech. These languages have become increasingly important recently. It is difficult to get a translation for them;

(b) Translation cells should be set up in the Language Departments of the University;

(c) A research scholar should be asked to learn two foreign languages before he starts doing research.

(d) The Language Departments in the University should train translators to do scientific and technical translations:

(e) The University Library should have a contract with a panel of translators and act as an agency to get translations done on payment;

(f) The University Library should maintain a roster of translators.

Knowledge of the foreign languages to be able to follow the literature in those languages

Table 11

Language	Number of persons T(18)	S(9)	J(38	Per cent of persons out of 65
German	12/66	3/33	8/21	35
German and Russian	4/22	0	0	6
Russian	5/28	0	0	8
French	3/17	2/22	0	8
French and German	1/6	0	0	2
One of the languages	14/78	5/56	8/21	42

Total number of persons who provided the above information = 65

T: Except for four persons every one of the eighteen teachers who filled the questionnaire knows one of the three languages (namely, German, Russian, and French). Out of these fourteen persons, twelve know German There are five persons who know two languages. But none knows more than two languages.

S: Only five of nine senior research fellows who filled the questionnaire know foreign languages. None of them knows more than one language and none knows Russian.

J: Only eight persons of the thirty-eight junior research fellows who filled the questionnaire know German and none of them knows any other language.

The above table shows forty-two per cent of the researchers know one foreign language. German seems to be exceedingly popular amongst all categories. Nobody amongst research fellows knows Russian. On the other hand, twenty-eight per cent of the teachers know Russian. The percentage of junior research fellows knowing a foreign language is twenty-one, which is far below the total average.

IDENTIFICATION AND USE OF LIBRARY SERVICES

Library consultation

Table 12

Name of the library consulted most	Number of persons T(17)	S(9)	J(38)	Total persons	Weighted percentage of persons
DU Library	11	3	12	26	41
Departmental Library	12	7	34	53	83
Personal Library	1	-	-	1	2

Total number of respondents = 64

Table 12 shows that the research fellows depend much more on the Departmental Library than the University Library. But the teachers seem to use both libraries about equally. On the whole, the Departmental Library is consulted more than the University Library. Sixteen persons (i.e. 1/4th of all persons) indicated that they consulted the University and Departmental Libraries equally.

There was one person who had a good personal collection. He was doing research in the field of theoretical Chemistry. He had been to the United States and had been able to build his own collection; further, his requirements were quite limited and could easily be satisfied by his own collection.

The question may be raised as to why researchers consulted the Delhi University Library less than the Departmental Library. The reason could be that most of the material of interest needed for day-to-day research is available in the Departmental Library.

Loan of Books

TABLE 13

Name of the library borrowed most	Number of persons who borrowed most			Total number of persons	Weighted percentage of persons who borrowed most
	T(17)	S(9)	J(38)	(64)	
DU Library	11	5	17	33	52
Departmental Library	11	6	30	47	73

Total respondents = 64

Table 13 shows that, for the purpose of borrowing, majority of them use the Departmental Library. The teachers seem to borrow most from both the libraries. On the other hand, the research fellows borrow most from the Departmental Library. It may be noted that sixteen persons (i.e. 1/4th of the respondents) indicated that they borrow equally from both the libraries.

Use of the Delhi University Library

TABLE 14

		Frequency						
		Daily	Three times a week	Two times a week	Once a week	Fortnightly	Monthly	Rarely
Number of persons	T(14)	1	4	-	4	1	1	3
	S(8)	-	2	4	2	-	-	-
	J(34)	3	6	4	17	3	1	-
Total		4	12	8	23	4	2	3
Cumulative total		4	16	24	47	51	53	56
Cumulative percentages of respondents of this question		7	29	43	84	91	95	100
Percentages of respondents of this question		7	21	14	41	7	4	5

Table 15

	Average number of hours spent in the library per user per week	Number of users
T	2	14
S	3	8
J	2 1/2	34

Average time spent per week = 2 1/2 hours

Table 14 and Table 15 indicate the following:

Of the fifty-six who use the library at all, forty-seven, i.e. eighty-four per cent, use it at least once a week. Of these forty-seven, twenty-four visit the library twice a week. Four researchers claimed that they use it daily; they account for seven per cent of the total respondents. On an average a researcher spent 2 1/2 hours per week in the Delhi University Library.

The use of the library may mean one of the following things: to obtain information or borrow or utilize the reading room.

Use of the Departmental Library

TABLE 16

		Frequency						
		Daily	Three times a week	Two times a week	Once a week	Fortnightly	Monthly	Rarely
Number of persons	T(14)	4	6	-	2	-	-	2
	S(8)	6	1	-	1	-	-	-
	J(36)	22	7	4	3	-	-	-
Total		32	14	4	6	-	-	2
Cumulative total		32	46	50	56	-	-	58
Cumulative percentages of respondents of this question		55	79	86	97	-	-	100
Percentages of respondents of this question		55	24	7	10	-	-	3

Table 17

	Average number of hours spent in the library per user per week	Number of users
T	4	14
S	4	8
J	5	36

Average time spent per week = 4 1/2 hours

Table 16 and Table 17 indicate the following:

Fifty-five per cent of persons use the Departmental Library daily and seventy-nine per cent of persons use it at least three times a week. Everybody, except two teachers, uses it at least once a week. Sixty-four of the senior research fellows and sixty-five per cent of the junior research fellows use it daily, as compared to thirty per cent of the teachers. Thus, the use in terms of the frequency of the visits is much less for the teachers than for research fellows in this sample.

The junior research fellows spend five hours per week on average in the Departmental Library. On the other hand, teachers and senior research fellows spend four hours per week on the average.

At least, one teacher mentioned that he borrowed from the library and read at home. Two teachers mentioned that they borrowed from the library and read in their offices

Comparisons between the use of Delhi University Library and Departmental Library

TABLE 18

	Number of users						
	Daily	Thrice a week	Twice a week	Once a week	Fortnightly	Monthly	Rarely
Delhi University Library	4(4)	12(16)	8(24)	23(47)	4(51)	2(53)	3(56)
Departmental Library	32(32)	14(46)	4(50)	6(56)	-	-	2(58)

The total number of respondents to the particular question is comparable (56 and 58) in respect of both categories and therefore, the comparison is reasonably valid.

TABLE 19

	Delhi University Library		Departmental Library	
	Hours per week	Number of users	Hours per week	Number of users
T	2	14	4	14
S	3	8	4	8
J	2 1/2	34	5	36
Weighted average	=2 1/2 hours per week		=4 1/2 hours per week	

Table 18 and 19 show thirty-two persons made use of the Departmental Library daily. On the other hand, only four persons use the University Library daily. Also fifty persons use the Departmental Library at least twice a week, whereas twenty-four persons used the University Library at least twice a week. Also we find an average researcher used the Departmental Library for four and a half hours a week, while an average researcher made use of the University Library for two and a half hours a week. Table 19 indicates that all categories of researchers seem to use the Departmental Library more than the University Library.

The probable reasons may be as follows:

(i) The Departmental Library is conveniently located in the Department, while the University Library is ten minutes walk away.

(ii) The information needed by the researchers for current awareness in their field and the information required for their immediate use in their research projects is generally available in the Departmental Library.

Use of other libraries

Nine researchers mentioned that they use other libraries. Three teachers indicated that they use other libraries rarely. They mentioned that they go to other libraries to consult specific articles. Two senior research fellows, three indicated that they used other libmonth each. Amongst the junior research fellows, three indicated that they used other libraries once a month and one stated that he used other libraries once a week. Evidently, little use seems to be made of the resources of other libraries.

Comparison with other libraries

Those who have experience of foreign libraries like those of the British Museum, Science Museum (London), the Institute of Chemistry of Natural Products (Moscow), the Rutgers University, the Manchester University, and the University of London Libraries feel less satisfied with the facilities and the collections of Delhi University Library system. They mentioned that foreign libraries are open for longer hours and most of the research material is available in one place.

As regards the periodicals holding; those who have used other libraries in India were of the definite view that Delhi University Library together with the Departmental Library is superior to University Libraries attached to the Banaras Hindu University, the Allahabad University, the University of Rajasthan, the Institute of Sciences (Bangalore), and the Madras University.

Specialized libraries are, however, likely to have better collections in their respective fields. As such, the researchers have found them very good in certain areas of specialization. For example, those working in the field of electrochemistry have found the Central Electrochemical Research Institute Library (Karaikudi) to be excellent in its own field. Similarly, some researchers have described the libraries like those of the IARI Library (New Delhi) in the field of agriculture, NPL Library (New Delhi) in the field of physical sciences as better ones.

Adequacy of Libraries

TABLE 20

		Completely adequate			Partially adequate			Not at all adequate			Completely inadequate		
		T	S	J	T	S	J	T	S	J	T	S	J
Number of persons	DU	5	2	9	9	5	17	-	1	2	-	-	-
	Dept.	1	1	10	10	4	21	1	1	1	1	-	-
Total		6	3	19	19	9	38	1	2	3	1	-	-

Total number of respondents = 60

TABLE 21

		Completely adequate	Partially adequate	Not at all adequate	Completely inadequate
Number of persons	DU	16(32%)	31(62%)	3(6)	-
	Dept.	12(24%)	35(69%)	3(6%)	1(2%)

Total number of respondents = 60

Table 20 and 21 indicate that thirty-two per cent of respondents regard the University Library as completely adequate. But sixty-two per cent (i.e. more than half of them) regard it as partially adequate. Only three persons asserted that it was not at all adequate.

About one-fourth of the persons, who responded to this part of the question regard Departmental Library as completely adequate. Sixty-nine per cent of them regard it as partially adequate.

Therefore, we find majority of researchers under study felt that both the libraries were partially adequate. It was surprising, indeed, that a larger percentage considered the University Library to be completely adequate than the Departmental Library.

Adequacy of other libraries

T: One person regards INSDOC Library as completely adequate for their needs. One regards NPL Library and Defence Science Library as partially adequate.

S: Two persons consider INSDOC Library as partially adequate.

J: One person each regards IARI Library, NPL Library, and INSDOC Library as completely adequate. One of them considers the Defence Science Library as partially adequate.

Request for material, success in satisfying the demand, and the time taken to get the material

TABLE 22

	Number of persons who filled questionnaire	Number of persons who answered this questionnaire	Do you ask for material not available in the University/Department Library? Number of persons who answered Yes	No	Percentage of persons who answered Yes	No
T	18	14	10	4	71	29
S	9	9	8	1	88	12
J	38	25	21	4	84	16
Total sample = 65		Weighted average percentage			=81	=19
Total of those who answered =48						

TABLE 23

	Number of persons who filled questionnaire	Number of persons who answered this question	Success in satisfying the demand All times	Most times	Rarely	Never
T	18	7	-	2	-	5
S	9	4	-	-	1	3
J	38	15	5	1	1	8
Total with Weighted average percentage =			5(20%)	3(12%)	2(8%)	16(64%)

TABLE 24

	Number of persons		Time taken to get the material					
	Who filled questionnaire	Who answered this question	Less than 1/2 hour	One week	Fortnightly	Monthly	Few weeks	Infinite
T	18	3	-	2	-	-	-	1
S	9	1	-	-	-	1	-	-
J	38	7	2	1	1	-	1	2
Total	65	11	2	3	1	1	1	3

The following conclusions can be drawn from Table 22 to 24:

Table 22 indicates that eighty-one per cent of the researchers, who answered this question, ask for the material not available in the University Library or in the Departmental Library.

Three teachers indicated that they go personally to other libraries to consult what was not available here or ask a friend to get it for them. Seven out of fifteen junior research fellows who answered, that is forty-seven per cent of the junior research fellows, said that their demands were satisfied at one or the other time, though not always. Five out of fifteen of them, that is thirty-three per cent of them, indicated that their demands were satisfied at all times. Table 23 also shows that sixty-four per cent of the researchers who answered, have indicated that the library never satisfied their demand. Only twenty per cent of them have indicated that the library was able to satisfy their demand every time (incidently, they were all junior research fellows). It seems majority of them never get what they asked for. In certain cases, they were so disillusioned that they had to go to the local libraries to get material or get it through some friend. Also it might be added that they seemed to be getting material not available here from various libraries all over Delhi.

The response to the question regarding time taken to get the material was very limited because many of the persons could not indicate the period of time. Table 24 shows no pattern with regard to time taken to get the material; it varies from less than half an hour to a few weeks. It might be added that some persons might have interpreted the question in terms of material not available on the shelf.

Other libraries which have made material available to researchers

TABLE 25

	Number of persons who filled the questionnaire	S. R. Inst	IARI	NPL	DSL	IIT Kanpur	IIS Bangalore
T	18	2	3	6	3	-	-
S	9	-	-	-	-	-	-
J	38	1	3	6	3	1	1
Total	65	3	6	12	6	1	1

Continued in the next page

Continued from the previous page

	Hans Raj College	Miranda House College	DGHS	Rajasthan University, Jaipur	CSIR	CERI	V.P. Chest Inst.	NIS	INSDOC
	-	-	1	-	1	1	1	2	3
	-	-	-	-	-	-	-	-	-
	1	2	-	1	-	-	-	-	1
Total	1	2	1	1	1	1	1	2	4

The following abbreviations have been used in the above table:

S.R. Inst. = Shri Ram Institute for Industrial Research Library; IARI = Indian Agricultural Research Institute Library; NPL = National Physical Laboratory Library; DSL = Defence Science Library; IIT, Kanpur = Indian Institute of Technology Library, Kanpur; IIS, Bangalore = Indian Institute of Science Library, Bangalore; DGHS = Director General Health Services Library; CSIR = Council of Scientific and Industrial Research Library; CERI = Central Electrochemical Research Institute Library, Karaikudi; V.P. Chest Inst. = Vallabh Bhai Patel Chest Institute Library; NIS = National Institute of Sciences Library; INSDOC = Indian National Scientific Documentation Centre Library; DU = Delhi University Library; Dept. = Departmental Library, Department of Chemistry, University of Delhi; and USIS = American Library.

Note: In case of local libraries the name of the city has been omitted.

It is to be noted in Table 25 that the number of persons who use other libraries is forty-three. The NPL Library seems to be used a great deal for getting material which is not available here. The researchers make use of as many as fourteen other libraries, which included ten special libraries, three university libraries, and two college libraries. Out of these, only four libraries are located outside Delhi. Previous contacts play an important role.

How far willing to go to consult a library regarding needs not being fulfilled presently by the libraries used?

TABLE 26

	Number of persons who filled the questionnaire	Who gave answer to this question	1 Km.	10 Km. less	or or	20 Km. less	Any distance
T	18	11	1	1		2	7
S	9	7	1	3		1	2
J	38	27	1	4		4	18
Total			3(7 per cent)	8(10 per cent)		7(16 per cent)	27(60 per cent)

Out of those who answered 60 per cent were willing to go to any distance to satisfy their needs, not being fulfilled by the libraries used by them. Those who indicated that they were willing to go to any distance must be seriously interested in getting the material and willing to go to some length. Some enthusiastics were willing to go to any part of the country to meet their requirements.

Do you ask for assistance?

TABLE 27

	Number of persons							
	Who filled the questionnaire	Do you ask for assistance						
		to locate books?		to locate current periodicals?		to understand the use of various tools?		Other?
		Yes	No	Yes	No	Yes	No	
T	18	10	8	12	-	2	-	1
S	9	9	-	7	-	-	-	-
J	38	26	1	26	-	2	-	5

Do you ask for assistance?

From Table 27 it appears those who seek assistance ask to locate a book or a current periodical. Hardly anybody seeks assistance of any other kind, very few persons ask for information other than location of material.

Services not provided by University and Departmental Libraries

TABLE 28

	Number of persons who filled the questionnaire	Number of persons in favour of			
		preparation of a bibliography	getting photocopy of an article	literature search	Others
T	18	4	12	4	3
S	9	1	8	2	1
J	38	7	24	4	1
Total persons	65	12(18 per cent)	44(68 per cent)	10(15 per cent	5(8 per cent

Table 28 shows 68 per cent of the persons are in favour of getting a photocopy of an article. Many of them would regard such a service as boon. 18 per cent of them favoured assistance in the preparation of a bibliography. Only 15 per cent favoured literature search by the library.

Other services

T : One teacher asked for the procurement of research journals by air mail, another the provision of documentation list and better and faster means of obtaining new books and material on inter-library loan.

S : Two persons mentioned the provision of translation services.

J : One person suggested the circulation of accession list. Two persons mentioned the provision for translation service.

Willingness to pay for services mentioned in Table 28

TABLE 28a

Number of persons who filled the questionnaire		Willing to pay: Yes without conditions	Willing to pay: Yes if nominal	No
T	18	10	2	3
S	9	8	1	-
J	38	21	1	4
Total	65	39	4	7

Table 28a shows the majority of researchers are in favour of payment, only a few were reluctant to pay. By talking to them it was found that the general attitude is that they would require these services rarely and the money to be spent thus would be small in amount and also worth it. Some of those who were not willing to pay suggested that the University or the Department should pay from its own funds. The quantum of services was expected to be small in the first instance.

Use of library catalogue effectively

TABLE 29

Number of persons who filled the questionnaire		Able to use the catalogue effectively: Yes	No
T	18	15	2
S	9	9	-
J	38	32	3
Total	65	56	5

Out of those who replied to the question, it was found fifty-six (i.e. ninety-two per cent) of them said they could use the library catalogue effectively. Only five (i.e. eight per cent) of them felt handicapped in the use of the catalogue.

Location of material in the library

TABLE 30

Number of persons who filled the questionnaire		Number of persons who can locate material: Yes	Sometimes not	No
T	18	13	3	1
S	9	9	-	-
J	38	32	2	2
Total	65	54	5	3

Location of material in the library

Table 30 indicates that most of them feel they do not have any difficulty in locating material in the University or Departmental Library. Talking to them it was found that the major difficulty in the location of material was that many a time things were misplaced. Otherwise, the indication was that they do not have any problem in the location of material.

Even though most of the users say they know how to use the catalogue effectively and are able to locate material, a large percentage of persons still ask for assistance to locate material in the library. May be at times the catalogue is not dependable or after not finding an item on the shelf they want to be doubly sure about the availability of the given item.

Easiest to use among the libraries used with regard to reference collection

TABLE 31

	Number of persons who filled the questionnaire	Easiest to use: DU	Dept.	IIT, Kanpur	NPL	DSL	IIS	CERI
T	18	9	6	1	1	-	-	-
S	9	1	5	-	-	-	-	-
J	38	11	20	-	-	-	1	1
Total	65	21	31	1	1	-	1	1

Out of fifty-two persons who answered this question twenty-one and thirty-one of them felt at home in the use of reference collections of the University and Departmental Libraries respectively. Four persons regard both libraries as most helpful in this respect. Thus, more persons regard the Departmental Library easiest to use but a few more teachers regard Delhi University Library as easiest. It is interesting to note that four persons regard other than these libraries easiest to use.

Easiest to use among the libraries used in searching periodical literature

TABLE 32

	Number of persons who filled the questionnaire	Easiest to use: DU	Dept.	IIT, Kanpur	NPL	IIS	CERI	IARI
T	18	11	8	1	1	-	-	-
S	9	2	6	-	-	-	-	-
J	38	13	18	-	-	1	1	1
Total	65	26	32	1	1	1	1	1

The pattern in Table 32 is the same as in Table 30 and Table 31.

Easiest to use among the libraries used for borrowing books

TABLE 33

	Number of persons who filled the questionnaire	Easiest to use						
		DU Lib.	Dept. Lib.	IIT, Kanpur Lib.	IIS Lib.	Madras Univ. Lib.	CERI Lib.	Miranda House Lib.
T	18	8	8	1	-	-	-	-
S	9	2	4	-	-	-	-	-
J	38	12	20	-	1	1	1	1
Total	65	22	32	1	1	1	1	1

Here also the pattern repeats itself as in Table 31 and Table 32. The only difference being that the equal number of teachers regard the University Library and Departmental Library as easiest to use for borrowing books. Note that one researcher is a teacher in a local college and thus she finds it easier to borrow books there.

Easiest among the libraries used in locating material on the shelves

TABLE 34

	Number of persons who filled the questionnaire	Easiest in locating							
		DU	Dept.	IIT, Kanpur	NPL	DSL	IIS	IARI	USIS
T	18	7	5	1	1	1	-	-	-
S	9	6	5	-	-	-	-	-	-
J	38	15	11	-	1	-	1	1	1
Total	65	28	21	1	2	1	1	1	1

Unlike Tables 31 to 33, more people regard Delhi University Library easiest in locating material on shelves, though senior research fellows regard Departmental Library easier to use in this respect. Note that seven persons opined that other libraries are easier to locate materials. One person mentioned that all the libraries are equally good for this purpose.

Easiest among the libraries used for consulting its card catalogue

TABLE 35

	Number of persons who filled the questionnaire	Easiest for consulting					
		DU	Dept.	IIT, Kanpur	NPL	USIS	IIS
T	18	8	5	1	1	-	-
S	9	2	1	-	-	-	-
J	38	16	3	-	-	1	1
Total	65	26	9	1	1	1	1

Table 35 proves that the overwhelming majority regards the Delhi University Library card catalogue easiest to use. As mentioned earlier, for all intents and purposes, there is no proper card catalogue in the Departmental Library. The data regarding the other activities was omitted because "Other activities" were not identified by the eight persons who replied to this question. The researchers find the University Library convenient to consult for the ease in locating materials on the shelves and also because of its card catalogue. They find the Departmental Library convenient on account of its reference collection and periodical literature and because of the ease of borrowing. It must be remembered that most of the researchers did not have the opportunity of consulting the services of other libraries, especially outside Delhi. This makes it difficult for them to use a comparative yardstick.

What makes a library easy to use

The researchers gave a variety of reasons which have been put under the broad categories given below:

TABLE 36

Name of item which makes it easy to use	Number of persons			
	T	S	J	Total
Easy access to materials (Open shelf, shelf guides, material in their place, quick location, etc.)	6	2	11	19
Condition of catalogue (Cross references, good and easy to understand)	1	1	10	12
Staff (Courtesy, willingness to help, qualified)	1	2	3	6
Availability of material (Fully equipped, to get all that is needed and available when needed)	-	1	5	6
Atmosphere in the library (Peaceful)	-	1	-	1

Many of the persons could not reply to this question because they could not perceive as to what made a library easy to use. Nineteen persons indicated that easy access makes a library easy to use. Twelve persons mentioned that a good and easy to understand catalogue makes it easier to use the library.

TRAINING IN THE USE OF LITERATURE

Skill in the use of science-technology literature

TABLE 37

	Number of persons who felt the need to improve their skill		Percentage of persons who felt the need to improve the skill	
	Yes	No	Yes	No
T	7	9	44	56
S	6	1	86	14
J	24	5	83	17
Total respondents= 52			Weighted average percentage of those who said yes= 71	

Table 37 shows that the teachers have more confidence in their skill to use science-technology literature than others. The reason may well be that the teachers are Ph. D's. and have many years of research experience behind them. Still almost forty-four per cent (slightly less than half) of them feel the need to improve their skill. A point to be noted is seventy-one per cent of the researchers altogether have indicated that they need to improve their skill. This seems to be a high percentage. This also means that there should be a programme for training researchers in the use of science-technology literature.

Training in the use of chemical literature

TABLE 38

	Number of persons who feel training would be helpful		Percentage of persons who feel training would be helpful	
	Yes	No	Yes	No.
T	10	8	56	44
S	8	1	89	11
J	29	7	81	19

Total respondents= 63 Weighted average percentage of persons who said yes= 75

Table 38 indicates that seventy-five per cent of the chemists feel that training would be helpful. This figure is a little higher than in the previous table. One conclusion to be drawn is that some researchers would like to be trained further in the use of chemical literature even though they are skilled in its use now.

The table also shows that larger percentage of research fellows than teachers feel the need for training in the use of chemical literature. It is a happy sign. It would seem that the formal training imparted to research fellows by their teachers was insufficient. Fifty-six per cent of the teachers themselves felt that training in the use of literature would be helpful. As seen in Table 37, forty-four per cent of the teachers themselves do not possess necessary skill in the aspect under consideration.

When to give training in the use of chemical literature?

TABLE 39

Level of training	Number of persons in each category			Number of persons in total in three categories according to the level of training	Percentage of persons in three categories according to the level of training
	T	S	J		
School	-	-	1	1	2
Undergraduate	1	1	1	3	6
Postgraduate*	4	2	17	23	43
Pre-Ph. D.**	3	4	11	18	33
Undergraduate and Postgraduate	1	-	-	1	2
Postgraduate and Pre-Ph. D.	4	1	1	6	11
Undergraduate and Pre-Ph. D.	-	-	1	1	2
Post-Ph. D.	-	-	1	1	2

Total respondents= 54

* Postgraduate is post-B. Sc.

** Pre-Ph. D. is post-M. Sc.

Of the persons who felt the need for training, forty-three per cent indicated that the training in the use of chemical literature should be given at the post-graduate level and thirty-three per cent felt that it should be given at the pre-Ph. D. level. Eleven per cent of the persons indicated that the training should be given both at the post-graduate level and the pre-Ph. D. level. These views may reflect the system of education prevailing in the country. At present, at the undergraduate level, the students mostly consult textbooks, for which they do not need any special skill. It is only in the later stages of study that they need the skill.

What about all those who never had training in their graduate studies? Perhaps, literature seminars, special lectures, and short courses with guided experience could be organised to help them. Special attention needs to be paid to their particular area of research.

Lectures on 'How to use a library effectively'

TABLE 40

	Number of persons who filled the questionnaire	Number of persons who are in favour of lectures	not in favour of lectures
T	18	14	2
S	9	7	1
J	38	27	7
Total	65	48	10

The data shows that forty-eight of the researchers have indicated their willingness to attend lectures on 'How to use a library effectively'. This means that if such lectures were organised there would be a positive response from researchers.

T : One mentioned that he would attend the lectures, if given by a well-trained librarian. Another indicated that he would attend, depending upon who delivered the lecture. One mentioned that he would attend the lectures if lectures were given subjectwise. Another mentioned convenient time as a basic factor in this respect.

J : Reasons as given above were adduced by two persons.

Thus, lectures should possibly be given by a subject literature specialist, to be arranged at a convenient time, and keeping in mind the specialized requirements of the researchers.

SUGGESTIONS TO MAKE EFFECTIVE USE OF LIBRARY RESOURCES/SERVICES

Suggestions by the users

It was suggested by the researchers again and again that every book and periodical needed by them should be located in one place and the most convenient place for them was the Department itself.

They mentioned that the display of periodicals in the main library was poor. Some of them said that the reshelving of books and periodicals was not being done properly. In this connection it was mentioned that the loose issues of journals got misplaced too often. It was suggested that the new issues of periodical publications should be placed on display by the same evening. Some of them suggested that journals like the Chemical abstracts and Current chemical papers should be received by air mail. That the library should get certain journals through diplomatic mail by air was also suggested.

The late return of periodicals after lapse of several months from the bindery was underlined. This problem of binding came up repeatedly.

It was suggested that the Chemical abstracts should not be issued to anybody. At present, the loose issues are issued to the teachers. Some researchers suggested that they should get the same privilege. Research fellows mentioned that the teachers should be asked to return items on loan with them in time.

The facilities for the reservation of books came under severe criticism. The purchase of multiple copies of textbooks was suggested as one way to get over the difficulty. It was mentioned that the library ought to have a copy of every standard book in Chemistry.

Some of them felt that the books were too late in arriving in the library. The processing routines need to be expedited in case of books in much demand.

One researcher mentioned that the Australian High Commission was prepared to supply a micro-copy of any document from Australia and accept the payment in rupees; he suggested that the library should utilize this service to save foreign exchange.

Several suggested the revival of accession list (discontinued lately) and its circulation amongst teachers and research fellows. One person suggested the addition of annotation to such a list.

One senior Professor was of the view that senior teachers should volunteer to make themselves available in the library for providing information in Chemistry to the readers. The appointment of a subject specialist in the main Library or the transfer of a trained person to the Departmental Library was also recommended.

A few mentioned the provision of translation service by the Library. Some mentioned the read out translation as a useful alternative.

Several demanded the extension of working hours of the reading rooms and keeping open of the Periodicals Section on Sundays. A Professor mentioned this as a serious handicap because he was able to use the University Library on Sundays only.

The liklihood of the library getting donations in the form of personal collections, especially from the senior teachers of the University, was suggested.

Many persons brought out the need for more printed guides in the library.

Some suggested that college libraries ought to do weeding of books, which should be collected at the University Library.

Suggestions by the author for the library

In the light of the suggestions by the users and findings of the survey, the following suggestions are mentioned:

The researchers have to consult quite often other subjects besides Chemistry. Therefore, the researchers must have materials in allied subjects especially, Mathematics, Physics, Biochemistry, and Botany made available to them. Thus certain material in these subjects could be purchased which may have been oriented towards the Chemists. Very often, material outside Chemistry would also be needed by researchers in subjects other than Chemistry. As such there are two possibilities, either such material would have to be duplicated or placed in the Main Library. Duplication would be desirable for those materials which are used by the Chemists quite often, otherwise an alternative solution would have to be devised. The researchers should be made aware of such problems as are faced by the Library.

The majority of the researchers (seventy-one per cent)feel the need to improve their skill in the use of science-technology literature. The percentage being much higher in the case of junior research fellows (eighty-three per cent) and senior research fellows (eighty-six per cent). This shows that something needs to be done in this direction either by the Department or the University Library or some other agency. They may be provided training in the 'use of chemical literature'.

Such a training shall aim at:

(a) knowing how to use the library effectively;

(b) getting acquainted with chemical literature and literature in allied areas, especially periodical publications;

(c) understanding the value and use of reference tools including bibliographical ones, especially in Chemistry and allied areas;

(d) training oneself for literature search; and

(e) learning how to compile a bibliography.

The method to be followed for such a training should include lectures, demonstrations, and practical library work.

Now the question arises, at which stage should this training be given and by whom? The right time is when the researcher realises the need for training. The need may be generated in several ways. It is related to the system of education; this should be incorporated in the syllabus. The library training should be a part of the subject training and should be provided in our situation at the postgraduate level.

It is suggested that whenever a researcher enrols himself as a member of the University Library, he should be given initiation by the reference librarian. He should also be given instruction in the use of the library.

As mentioned earlier, many chemists work in groups. Each group concerns itself with a common field. The University Library must identify these groups and their areas of interest. If possible the University can maintain a group profile of these people. If their interests change or new groups come up, the University Library should know about them.

The findings of the survey indicate that even the existing services being provided by the University Library have not been publicized sufficiently. The users generally do not know what they could expect from the library other than getting books and periodicals issued. This requires two-way communication, i.e. between the library and the users. At any time if the University Library wants to start on the programme of publicizing its services, the Library must see to it that it is in a position to handle the sudden increase in the use of its services. In this connection it may be mentioned that one senior Professor of Chemistry indicated that a few senior teachers would be willing to devote some time in the library to do literature search and provide information in the field of Chemistry to those who might need it. May be the library should maintain a roster of such cooperative teachers and it call on them whenever the need arises.

There were forty-four persons (out of sixty-five who filled the questionnaire) who indicated in favour of getting photocopying service in the library. In order to make library services effective, it is essential that this service should be provided by the University or the Departmental Library.

Talking to researchers and also through the questionnaire it came to notice that the library collection in certain areas is not strong enough to support their research needs. This means that the University Library must make investigations to find strong and weak areas. Then it must strengthen the weak areas. The weakness of a collection points out the lack of interest on the part of those who are responsible for book selection. This requires constant interest, vigilance, the knowledge of book-selection tools, and of the book trade. The University Library must have a clear policy regarding selection of materials. Some of the members of the library staff must keep track of information regarding publications in different fields and they should be made responsible for building up of the collection for the researchers with the assistance of the researchers themselves. This requires persons who have the necessary background in subject literature, who have also all the qualities of being a booklover, and who feel deep responsibility for their work. A library which totally depends upon teachers to do selection can never build up a balanced collection. (At present materials in Chemistry are generally purchased on the recommendations of two senior teachers from the Department.) The teachers are too specialised and may not know what important publications are being brought-out in other fields than their own area of specialisation. They may not be familiar with the tools of selection and also in most cases they may not be able to do this work regularly. In order to do full justice, the University Library should employ at least one person who must be a specialist in the literature of Chemistry. He should select books and other materials and provide reference service. The University Library should embark on a major programme of building up a sound collection and should try to get all the essential periodicals.

Two major difficulties being faced by the users in the case of material already in the library are the delay in binding, and misplaced books and periodicals. We believe that these two problems should be tackled on priority basis. The library must, for example, stipulate in the contract with the binder that bound volumes must be returned within a stipulated period. Shelving of books must be supervised strictly and it must take place at least twice a day. The service of reservation of materials needs to be improved. Besides, loose issues of periodicals should normally not be issued to anybody. If steps are taken along the lines suggested, it would be possible for users to have far more confidence in the services offered by the library. If a user visits the library on a number of occasions and does not get what he believes is available in the library, he becomes frustrated and is apt to loose faith in the library.

Already the University Library is getting a few journals by air. The library should try to get more of them by air so that the users could get the requisite information as early as possible. In the case of material where the recency is crucial to the researcher, the library should not hesitate to get such material by air mail.

It was mentioned by the users that the books are acquired comparatively late by the library. This problem can be got over if books are selected at an early stage by the members of the library staff and then are ordered early also.

Circulation of an accesion list is the least a library can do towards dissemination of information. This list should be restarted and given wide publicity.

Library hours need to be increased throughout the year, especially the periodical section should be kept open on Sundays as well.

Before alloting a topic for research, the Department must study the implications in terms of the facilities provided by the library. The University Library on its part should try to know about the research programme and the future needs in advance so that it is in a position to deal with demands made on it effectively. This requires a close coordination between the two.

It was mentoned by a few research scholars that, in the books collection, there are a large number of out-of-date books, which hinder the use of collection. It is suggested that a part of such material needs to be discarded or stored separately, in certain cases some of it will have to be replaced by latest editions.

It should be possible for researchers to make use of other departmental libraries with the same ease as Chemistry Departmental Library.

The researchers suggested that any material they need should readily be made available in the Departmental Library. But this would lead to duplication of material and services, and ultimately, increase in costs. Thus, the library would have to find a balance between convenience and keeping costs within the limit, though this is somewhat difficult. It must be kept in mind that a researcher working on a project in the laboratory would like to have things easily accessible in the Department itself.

The users pointed out to the lack of instructional guides in the University Library, and the need for clearly written class numbers on tags.

An important thing the University Library can do is to acquire collections as gifts.

The Library staff should make continuous use studies and compare their findings with international results. The results should be used to improve services.

Basically, a scientist may expect adequate, efficient, and courteous service by in a university library, because of the large number of users, it would not be possible to provide personal services to the same extent as could be done in some of the special libraries. Therefore, a university library must take the necessary steps keeping in view its resources.

Suggestions by the author for the training of the librarians

As already noticed, researcher in chemical sciences often consult literature in allied areas, therefore, in the training of librarians the interdisciplinary approach of researchers must be emphasized. They should be told that, in the programme for building up of library collection, this approach should be kept in mind.

It must be realized that, however capable a person might be in his area of specialization, still in many cases he would need training in the use of chemical literature. In order to be able to provide such a training, a librarian must become familiar with literature, bibliographical tools, literature search, etc., in the particular field and related areas. While teaching, students must be told of such a training. This might be equally true in fields other than Chemistry.

The survey has indicated that many of the researchers have not been able to use the

University Library effectively because they do not know what exactly to expect from the Library; they feel frustrated in their use of the Library due to certain shortcomings in the services rendered. This is directly related to the fact that the librarians should maintain formal as well informal relations with the users and try to find out how the library services could be improved. After knowing this the librarian can make an attempt to improve the situation. Whatever he does he should keep in view the users, for whom the library exists. Thus, it should be emphasised to students that the necessity of knowing the needs of the users is paramount; they should be made to understand how users use literature. It must be indicated to them that the users want information, they do not care about how the library manages to provide information to them. It might be noted in most cases, a researcher needs information immediately and he cannot afford to wait for a long time, otherwise he will be left far behind in his research. As such, library schools should aim to teach students in such a way that, eventually, they provide information promptly and efficiently. They need to train literature scientists, persons in whom the users can have confidence. The budding librarian must be made to realise that he should not keep himself so busy with the techniques as not to find time to help the user personally.

The students must be made to understand that the needs of the scholars are always varied and no single library can meet all their demands fully. But a librarian who knows about the resources of his library and other libraries may be in a better position to satisfy the demands of the users. Time is of great importance, therefore, they must get what they need at the earliest moment.

Uptil now, in India, we have been providing traditional services in libraries. We should go beyond this and think of providing new services in the form of intensive reference service. The survey has indicated that researchers in Chemistry would prefer to have services like getting photocopy of an article, preparation of a bibliography, doing literature search, etc. The times are fast changing, the concept of library service has already undergone change and the training of librarians should fall in line with the new thinking.

A given library may have sufficient resources in the form of materials and manpower but it will not be serving the ends properly if the resources are not made use of to the maximum extent. Access to material should be complete, services and materials should be so organised that as far as possible materials acquired by the library are available for use as and when needed by the user. If the library does not posses certain material then the librarian must see to it that the user is supplied with his requirements, through inter-library loan.

The librarian must always ask himself: are we doing as best as we ought to, if not, why? He must keep on investigating new means and ways to improve the organisation and services of the library.

A researcher can no longer afford to miss to know about contributions in leading languages other than in English. As such, librarians ought to collect materials published in other languages, especially in Russian, German, Chinese, and Japanese. In order to provide documentation services, the librarians must know these languages. A time has to come when students of Library Science are to be encouraged to learn foreign languages in order to be able to serve material and to provide information.

In a course for the training of chemical librarians, the findings of a survey of this type can be of special value. This indicates how researchers in Chemistry get information and what type of publications are used by them. This lets us know what their special problems are in the use of library resources under a set of given circumstances.

The students should be told about the need and importance of surveys. They should be taught how to conduct surveys and evaluate the results for the improvement of services.

It might be noted that the above suggestions are equally applicable for other categories of scientists and scientific fields.

CONCLUSION

It has been estimated that five per cent of the amount spent on research in Chemistry should be utilized towards acquiring Chemical literature resources. Budget estimate for 1967/68 for Department and Centre of Advanced Study in Chemistry of Natural Products was about Rs. 1,029,300 and the amount spent by the University Library in purchasing resources in Chemistry was about Rs. 58,000. It is a happy augury that the amount spent on resources agrees with the estimate that five per cent of the amount spent on research in Chemistry should be spent on acquiring chemical literature resources.

Now let us look at the total resources available to the Chemists here. The total number of books including textbooks and reference books is about 4,800 and the total number of periodicals volumes of Chemistry periodicals is about 3,500. The Chemists Club Library of New York is supposed to have an excellent collection in the field of Chemistry. May be the University Library should pattern itself on this model. It contains 50,000 volumes, most of which are in the field of Chemistry. This we have observed that the library system under consideration has somewhat limited resources as compared with the above library.

It may be pointed out that the budget estimate of the Department of Chemistry for 1968/69 is Rs. 784,800; besides this, the budget estimate for the same period of Centre of Advanced Study in Chemistry of Natural Products is Rs. 383,200. The question arises that, if the Department (including the Advance Centre which is located at the Department) can afford to spend such a large amount of money on salaries and equipment, should it not spare a small amount of the order of Rs. 8,000 (being .7 per cent of the whole budget) to create a post of Documentation Officer? He should be able to provide help in literature searches and dissemination of information, besides looking after the Departmental collection. The total saving in terms of time of researchers would be worth it, while he should be at least an M. Sc. in Chemistry and hold a B. Lib. Sc. degree in Library Science. If he has experience of research it would be still preferable. May be a researcher could be selected and sent for training to a library school.

This survey has underlined the importance of communication between the librarians and the users. Through the present survey some of them have become aware of what the University Library could do for them. It was found that some of them did not know about how the library could help them. There were a few who became quite interested in discussing their problems regarding the library use after realizing that at least somebody was interested in their problems regarding library use. It was interesting to note that many persons showed interest in the training programme for librarians. Here it may be added that the very image of the library and the librarians is made or marred a great deal due to lack of communication.

It was found that their approach to the services, provided by the libraries used by them, at present was rather critical. Only a few persons showed a sympathetic consideration under which the librarians have to work very often. On the other hand, their expectations were not very high. Since a small number of persons had used other libraries for research needs, therefore, they could not visualize what an excellent library can offer to them in the form of services and materials. Some of them thought the present libraries are serving them too well; naturally, their expectations were too low.

It would not be out of the way to mention that the teaching system is undergoing changes, though slowly. The expectation is that there will be increasing use of the library resources and services. All indications are that the number of students, research scholars, and teachers, and the amount of information are increasing rapidly. All of this has important implications for a university library. The question may well be asked: are our university libraries ready to face such a situation? Are our library schools in a position to train persons who would be able to face the challenge presented by the changing conditions and higher expectations of the university libraries?

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APPENDIX I

QUESTIONNAIRE

UNIVERSITY OF DELHI
DEPARTMENT OF LIBRARY SCIENCE

Users' Survey

You are kindly requested to assist in the search for information with regard to the information needs, types of information, and the use of science-technology literature by research workers so as to enable librarians to provide you more effective library services.

Please think over the questions in Part I and we will discuss them together at some time convenient to you.

Please answer the questions in Part II and make any additional suggestions on the back of these pages or on a separate sheet of paper.

Your cooperation is appreciated and the information provided will be kept confidential.

Part I for discussion

A. What are your needs for information in terms of amount, kinds, levels, variations at different times such as at the beginning, during, and at the end of a research project.

B. How do you get the information you need?

C. Which types of publications do you use? e.g. books (i.e. monographs), handbooks, literature guides, journals, abstracts, indexes, reviews, research reports, advances in —, Progress in... etc.

For what purpose do you use each of the type of publication used by you.

D. Are you able to keep up with the literature in your field?
Do you have any problems in keeping up with your field?

E. Have you ever used a library outside Delhi including the ones located in foreign countries? Give your impression and compare them with the libraries used by you at present.

Name ____________ Department ____________

Area of research ____________ Status ____________

Date ____________

Part II for factual answers

1. How much time on an average do you spend on reading in your field in a week?
____

2. How much time on an average do you spend in the laboratory in a week?
____

3. Which foreign languages can you read to be able to follow literature in that language?
____

4. Of which professional societies are you a member?
____

5. What other subjects besides Chemistry, do you need to consult and how often (frequently or rarely or never)?

	Subject	How often
5.1.		
5.2.		
5.3.		

6. Have you ever felt the need to improve your skill in the use of science-technology literature ____________

7. 7.1. Do you think training in the use of Chemical literature would be helpful to you?
____
If yes, when should this training be given:
7.2 Undergraduate level ____________ 7.4. Pre-Ph.D. Level ____________
7.3 Postgraduate level ____________ 7.4. Any other level ____________

8. 8.1 Which library do you consult most? ____________
8.2 Which library do you borrow from most? ____________

9. How many hours per week on an average do you spend on reading in your field in library and elsewhere, and how often do you do it? (Daily, 3 times a week, once a week, fortnightly, monthly, rarely, once only).

		How often	Time spent per week (hours)
9.1	in the University Library (main)		
9.2	in the Department of Chemistry Library		
9.3	in other library(ies)		
9.4	at home		
9.5	enroute between home and department		

10. Do you find the collection in the field of your interest in the libraries you use most, strong enough to meet your demands. Indicate below names:

		Names of the libraries
10.1	Completely adequate	____________
10.2	Partially adequate	____________
10.3	Not at all adequate	____________
10.4	Completely inadequate	____________

USERS' SURVEY CONCERNING TEACHERS AND RESEARCH SCHOLARS

11. 11.1 Do you ever ask for material not available in the University Library/Department Library? ____________________
    11.2 How many times in the past 12 months did the library succeed in satisfying your demand? ____________________
    11.3 How much time did it take to get the material? ____________________
    11.4 What other libraries have given you such service? ____________________

12. How far in terms of distance would you go to consult a library for your needs not fulfilled by the libraries you now use?
    ____

13. Do you ask for assistance from the reference librarian or other members of the library staff in these libraries:
    13.1 to locate books or other items ____________________
    13.2 to locate current periodicals ____________________
    13.3 to understand the use of various tools ____________________
    13.4 other assistance ____________________

14. 14.1 What service not now provided in the University/Department Library would you like to be made available? (e.g. preparation of a bibliography, getting a photocopy of article, doing literature search etc.)
    ____
    14.2 Are you willing to pay for such special services?

15. Can you use a library card catalogue effectively?

16. Can you locate material in a library?

17. Which library do you think is easiest to use:

	Name of library
17.1 Its reference collection	
17.2 In searching periodical literature	
17.3 For borrowing books	
17.4 In locating material on shelves	
17.5 For consulting its card catalogue	
17.6 Other activities	
17.7 General comments on what makes a library easy to use	

18. Suppose there were to be two or three lectures on 'How to use a library effectively', would you attend these?

19. About how many scientific journals do you:

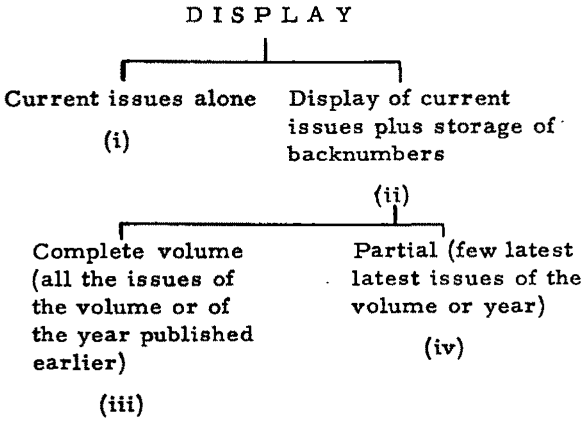
	Indian	Foreign
19.1 subscribe to		
19.2 read regularly		
19.3 scan regularly		

DISPLAY OF PERIODICALS

M. S. Saratchandra Kumar
British Council Library, Madras-2

Inspite of great advances made in the systematic analysis and announcement of the contents of an ever increasing number of periodicals, proper display of current issues of periodicals, received in the library, remains to be an effective device to bring the author and his readers nearer. The paper discusses the objectives of periodicals display and the methods and equipment available and brings out the relative merits of these equipment and models. Some of the display models are illustrated.

With the advent of documentation, the work relating to the analysis and reporting of current literature appearing as articles in periodicals has stolen the show, but in a library, display of periodicals remains an important method to announce the arrival of new issues of periodicals to the clientele. There are different ways of displaying and storing the periodicals and in this article different methods of display of periodicals and the equipment required are dealt with. A few important points about display are as follows:


DISPLAY
Current issues alone
(i)
Display of current issues plus storage of backnumbers
(ii)
Complete volume (all the issues of the volume or of the year published earlier)
(iii)
Partial (few latest latest issues of the volume or year)
(iv)

There are three kinds of arrangements to be considered here:

(i) Display of current issues only.

(ii) Display of current issues plus storage of some of the backnumbers of that volume or year; and

(iii) Display of current issues plus storage of all the backnumbers of that year or volume.

Now let us consider the different models available and how far they satisfy the methods of display mentioned above in the light of:

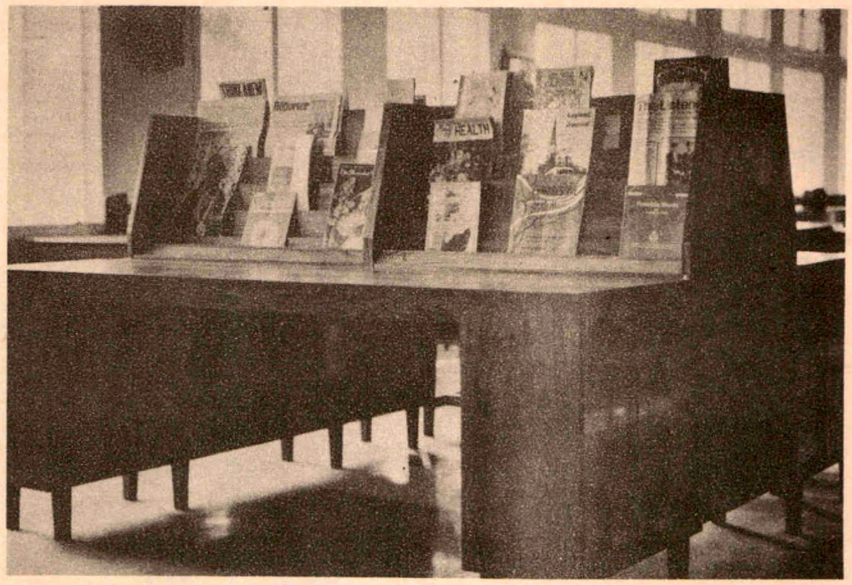
(i) Economy
(ii) Service and
(iii) Readers approach

MODEL-1. DISPLAY ON READING TABLES

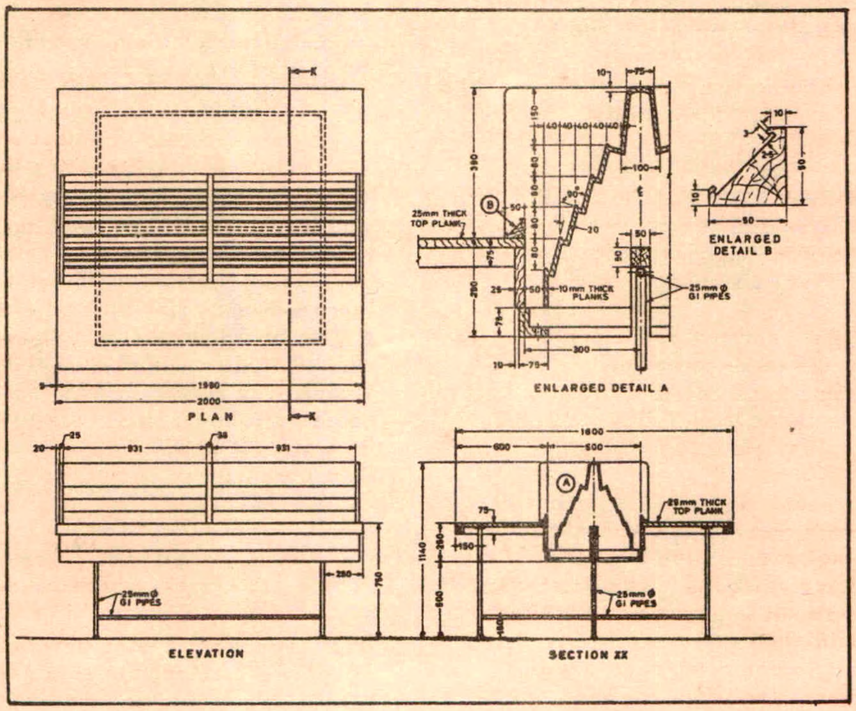
Perhaps, the simplest way of displaying the periodicals is to scatter them on the reading tables. But this gives a very clumsy appearance and considerable juggling is needed on the part of a reader to extract the required journal. Moreover for a change of periodical, the reader may have to change his seat for at every seat one particular issue of a periodical is placed. So this arrangement may not be convenient to the reader. "A flat display on tables is impossible to keep tidy and should be adopted as a last resort", says Miss J. Simmons.

MODEL-2. TABLE WITH CENTRAL GALLERY

Probably a later development is the display of periodicals on a gallery fixed at the centre of a table, the overall measurements for which will be 8' wide, 6' deep (vide illus No. M2). It may also be noted that the Indian Standards Institution has standardised the following specifications for the periodicals table (vide illus No. M2A). The



M2 Table with a central gallery



M2A Specifications for display table.
[Reproduced with kind permission of ISI, from IS: 1829(Part 1) - 1961, ***Specification for*** *library furniture and fittings, pt 1- Timber; available from all offices of the* ***Indian*** *Standards Institution at Rs 4.00 per copy]*

exact specifications quote catalogue No. ISI: 1829 (Part I-1961), page number 9 item No. 17 are as follows:

17. Periodicals table

17. 1. Dimensions and constructional features

17. 1. 1. The essential dimensions for periodicals table shall be as shown in Fig. 13 [illus. M. 2A]

17. 1. 2. Gallery for periodicals: The gallery for periodicals shall be as shown in detail in Fig. 13. To prevent the periodicals from toppling over, a wire or cord may be secured along the front of each step of the gallery, above mid height.

17. 1. 3. Label holder: On the table top along the length of the gallery an inclined lableholder shall be provided. It shall have a groove with a slightly wedgeshaped across section to take a strip of cardboard above 50mm wide as shown in Fig. 13 [illus M. 2A].

17. 1. 4. Kneehole space and foot rest: The kneehole space and foot rest shall conform to the requirements given in 7. 1. 4 and 7. 1. 5.

7. 1. 4. Knee hole space: The kneehole space shall be 450 mm deep, 550mm high and 600 mm wide.

7. 1. 5. Foot Rest: The foot rest, either in the form of a fixed rod or bar or as a separate pipe at 150mm height from the floor may be provided, where necessary.

This model serves a 'dual' purpose, in the sense that the table can be utilised not only as a reading table but also for display. This model accommodates fairly large numbei of periodicals, say sixty to seventy.

The aforesaid model can be improved by making provision for storage of backnumbers in side-cupboards (vide illus No. M. 2). But in this case the disadvantage is that, though the table is claimed to serve a dual purpose, the reader at the table is disturbed every now and then by other readers who want to pick up the journal required or who want to replace the journal after perusal. It is obvious that not more than four or five people can sit on either side of the table whereas provision is made to accommodate sixty to seventy issues. So the readers of the other fifty to sixty periodicals prove themselves to be a source of disturbance to the readers at the table. Moreover the unit is weighty and not easily movable.

The periodical table of the Fuel Research Station of D. S. I. R. designed by Dr. D. T. Thomas which has drawn the attention of the visitors (as is stated in the Library Association Record, Vol. 55, Dec. 1953, p. 397) may be considered to be a modification of the Model No. 2. The modification is nothing but substitution of the central gallery with nine horizontal sheets of plate glass which together form ten glass shelves extending the length of the rack.

The periodicals lie flat on the glass shelves. Each glass shelf is labelled on both sides of the rack with the name of the periodical it accommodates. The periodicals are arranged roughly in alphabetical order.

But this model does not allow display of periodicals as they are placed flat and due to this, considerable juggling is required to extract the periodical needed in case the periodicals are misplaced. Also, compared to Model No. 2, it accommodates lesser number of periodicals.

MODEL-3. DISPLAY STANDS

Perhaps this is an improvement on Model No. 2 (vide illus No. M. 5 Type 4). To be specific one of the functions of Model No. 2 is ignored here. Only the central gallery of the periodicals table is given the shape of an independent display stand. In this model, only the top of the periodical is revealed. "The rack easily accommodates from 25 to 35 magazines. The rack is easily movable. Backnumbers of magazines may be stored on the roomy shelf in the rear". (Mehra & Co., and Standard Library Supplies - Library furniture catalogues).

But I feel that the space at the rear is not adequate to accommodate all the backnumbers and so this model demands the provision for a separate unit or at least an additional unit for the storage of the backnumbers.

MODEL-4. SHELF WITH PIGEON HOLES

If display is considered to be only of secondary importance, periodicals may be stored flat in pigeon holes; these are specially made units with shallow shelves fitted between uprights. Such a unit 3' wide, whose lowest shelf is 12" from the floor and whose height is 6' could house 90 to 100 periodicals, when they are placed with their lower edge only exposed. If the spine is shown, which is perhaps preferable as an aid to quick identification, a greater length of shelving space is needed for the same number of periodicals. The journals are stored upright on shelves with a vertical partition every 9" or so apart.

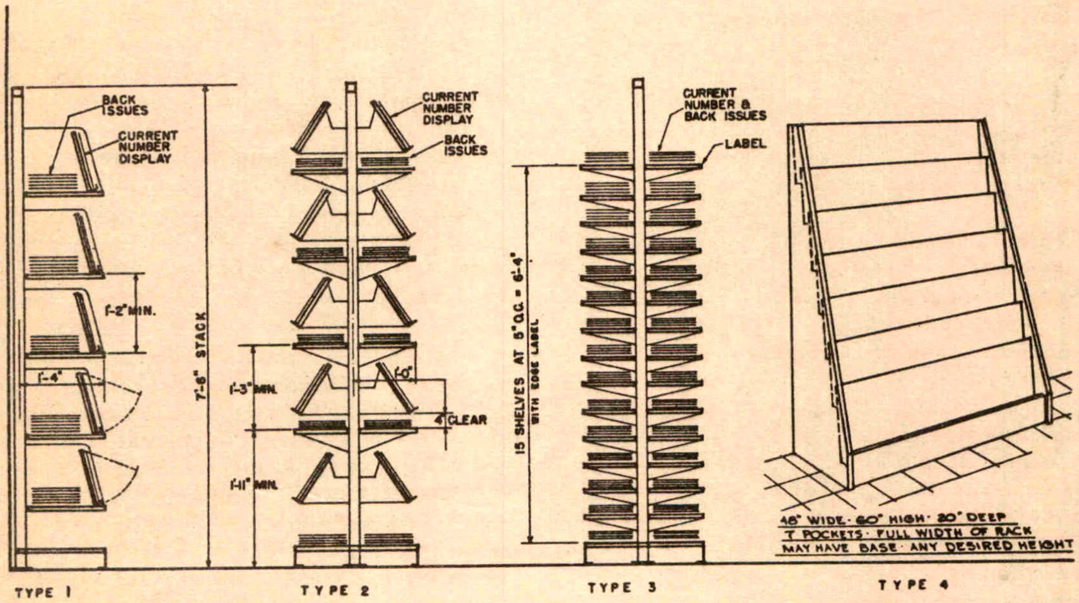
Though it results in a great saving of space, the periodicals are not so much displayed to be made accessible to readers. The issues may be provided with jackets. The jackets can be numbered on the spine or the title may be printed thereon. Each periodical may be allotted a pigeon hole and an alphabetical arrangement may be followed. Or else, periodicals may be classified according to the subject and sufficient number of pigeon holes may be allocated for each subject. However, the pigeon holes should be labelled for easy identification.

Great care should be taken to ensure that readers return periodicals to the correct pigeon hole, because the reader is apt to return his periodical to the nearest empty space rather than to the correct place. A method of limiting the likelihood of misfiling is to have protective covers bound in a series of distinctive colours using a different colour for each row of pigeon holes, each series of fifty numbers, or for a group of initial letters if alphabetical filing is used.

However the difficulty in this kind of arrangement is that the reader should first look into the index prepared for the journals location.

MODEL-5. SUGGESTION OF D. L. SMITH AND E. G. BAXTER

According to Smith and Baxter, "The most satisfactory method however, is to use ordinary shelves of adequate depth (9"), with any suitable height between shelves, laying periodicals flat -- latest issue on top and previous unbound parts underneath". (Vide illus No. M5. Type 3).

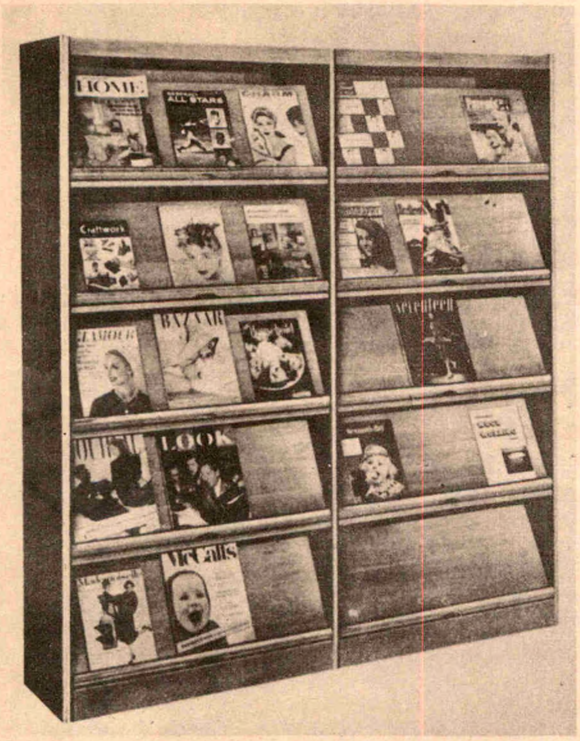


M5 Four types of shelving for current periodicals.
[Reproduced with kind permission of McGraw-Hill Book Co., New York, from Planning Academic and Research Library Buildings by Keyes D. Metcalf, fig. 8. 18, p. 172 (Copyright - American Library Association, 1965)].

Philip Colehan while editing a symposium on furniture and furnishings in the Assistant Librarian, of 1963, summarised the different ways of display of periodicals, and one of them appears to be an improvement on the method of display suggested by Smith and Baxter. The periodicals are filed flat in book cases of conventional design, but with extra shelves and with one or two removable sloping shelves at chest height in each book case for display of most important titles. Remaining titles are filed flat.

MODEL-6. SLOPING DISPLAY RACK WITH PROVISION FOR DISPLAY OF CURRENT ISSUES ONLY

A popular method is to display the magazines in racks with sloping shelves having a projecting lip along the edge upon which the periodical rests in an upright position. In this model the full cover page of the periodical can be seen and the display is certainly attractive. A unit of 7' 6" x 3' x 15" deep with 5 sloping shelves may accomodate 15 journals. (vide illus. No. M. 6).



M6. Sloping display rack for current issues only

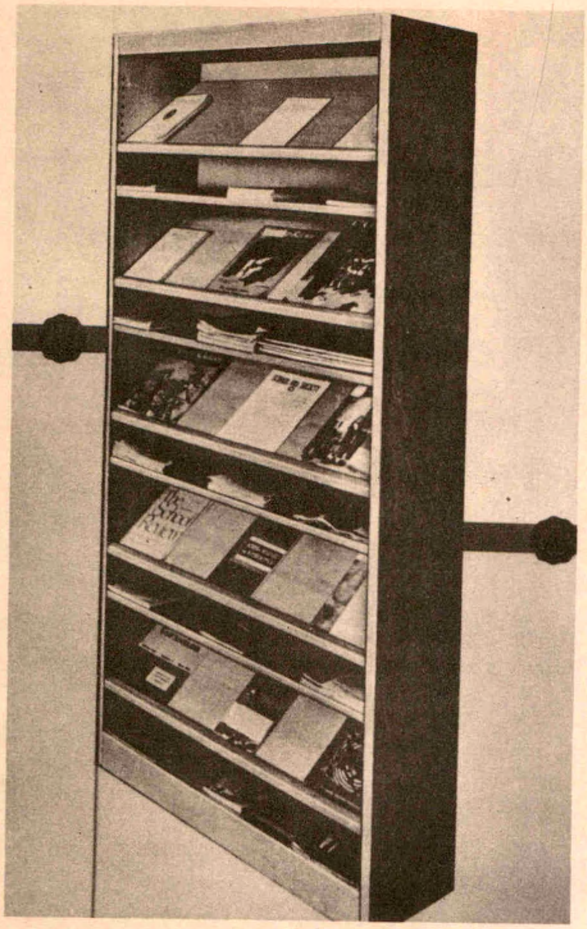
MODEL-7. SLOPING DISPLAY RACK WITH PROVISION TO HOUSE A FEW BACKNUMBERS UNDERNEATH THE CURRENT NUMBER

A further evolution in designing periodical display unit is perhaps that of model No. 7. The shelf has alternating sloping and flat shelves. Current numbers are displayed on sloping shelves with corresponding backnumbers housed on flat shelves directly below. Here the model is almost similar to item No. 6, but for the provision made for keeping the latest backnumbers underneath the current number. (vide illus. No. M7 and M5 type 2).

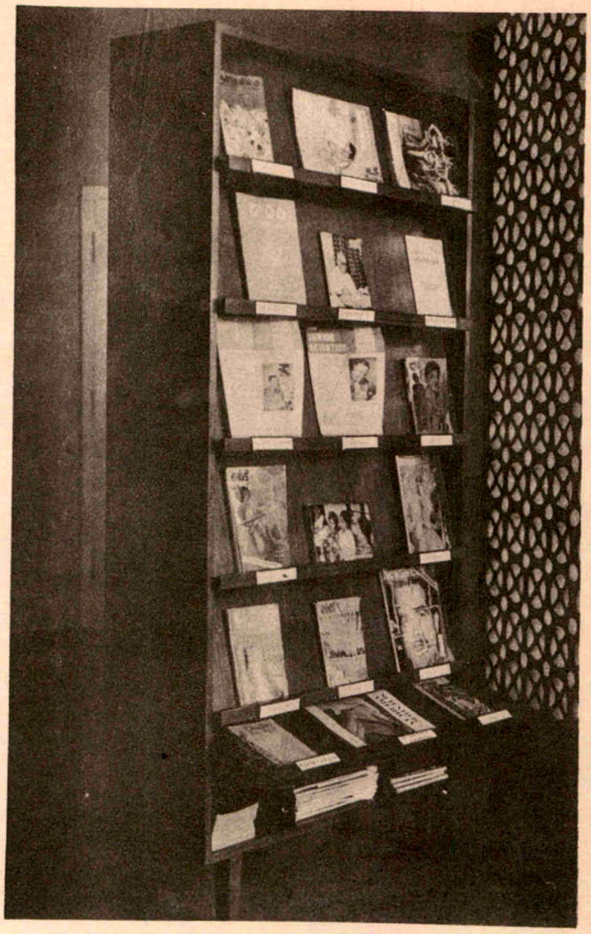
This is probably to 'save the time of the reader' in picking up the latest backnumbers. So here we presume that the readers want mainly the latest backnumbers and the previous issues.

Of the models so far considered Model No. 4 & 5 do not permit display of periodicals. The other models 'for display' demand the provision of a separate unit for the storage of backnumbers. In other words the display unit is meant mainly for the display of current journals and the backnumbers cannot be stored. Even model 2, 3 & 7 though they offer some shelving space for backnumbers, the space is insufficient. For instance, model No. 2 accommodates from 60 to 70 current journals, but backnumbers for only 25 to 35 journals can be accommodated in the storage space provided on either side. So also the space provided at the rear in model No. 3 is inadequate to accomodate the backnumbers of all the current journals displayed on the front side. Model No. 7 is designed to store only a few latest backnumbers along with the display of the current journal.

Experience and observation proves that it is more economical and convenient to keep the current number and all the backnumbers of a journal together, for "earlier numbers of the current volume will be found to be as much in demand as the current copy (D. E. Davinson)". Backnumbers, especially in the case of technical magazines, are as important as the current issues. Even considering the recreational magazines, the reader may like to go through the backnumbers when the current number is not available to him or when he is interested in going through an article published previously. It is inconvenient to both staff and readers if backnumbers have constantly



M7 Sloping display rack with provision to house a few backnumbers



M8 Display unit with storage space for backnumbers

to be sought in a storage room. So we must consider equipment for combing the housing of current issues with the storage of all the backnumbers for the year or volume.

MODEL-8.

The display unit meant for this purpose may be 7'6" x 3' x 15" deep with six compartments individually enclosed by hinged sloping top hung fronts with ledges at bottom and with hooks and eyes. This unit accommodates about 15 to 20 journals. The display front may be opened and the backnumbers can be stored behind the current journal (vide illus No. M8 & M5; Type 1).

THE ADVANTAGES OF THIS MODEL

(i) There is economy, for the same unit serves both for the display of current issues as well as for storage of backnumbers in contrast to the other models.

(ii) As the reader can have access to all the issues of a volume or year at a time, the functional aspect is satisfactory from both service point of view and from readers approach point of view.

The model thus satisfies the three requisites mentioned earlier - economy, service, and readers approach.

PROBABLE DIFFICULTIES

PROBLEM: 1 It is important to ascertain whether it is possible to house all the backnumbers of a journal along with the display of current periodicals. The reasons being:

(1) We have no control over the thickness of a periodical. For any reason the periodical may either become bulky or may become thin.

(2) We have no control over the periodicity of a journal. The periodicity may change from time to time if not frequently at least occasionally.

If a weekly is considerably thick it is likely that we may not be able to house all the backnumbers immediately behind the current issue.

SOLUTION-1. A probable solution to get over the difficulty is to classify the journals into weeklies and non-weeklies and design display units of Model 7 for the weeklies with greater storage space. But this kind of classification has the disadvantage of breaking the sequence and unless the reader is aware of periodicity he has to look for the magazine in two sequences.

SOLUTION-2. Next solution is to design a flexible model.

For example, let us consider that in model No. 7 provision is so made that the flat shelf is adjustable and so also the sloping front is removable and can be fixed at any place for display of the current issue.

DISADVANTAGES: (1) The model becomes undoubtedly more expensive and thus less economical. There is no economy of space too. Imagine a weekly, a monthly, and a quarterly are placed side by side in a sloping front. To accommodate all the backnumbers of the weekly, extra space is allotted for storage as the equipment is flexible. There is no need to say that the space required for the backnumbers of monthlies and quarterlies is less compared to the weeklies for the simple reason that 51 backnumbers are to be stored in the case of a weekly; 11 in the case of monthly and 3 in the case of a quarterly if backnumbers are to be housed for one year in the unit. So there is wastage of storage space as the same volume of space is provided for weekly, monthly, and quarterly though the later do not require so much of space as that of the former. Moreover due to irregular shelving the beauty in display is marred.

We cannot have flexible method in model 8 as in this model the sloping shelf should be in proportion to the height of the storage space behind. So a flexible equipment is not practicable.

SOLUTION-3 A simple solution to get over the difficulty is to cut short the number of periodicals on display on the sloping front leaving enough space in between two journals and arrange the backnumbers in more than one row. But due to such gaps the beauty in display may be marred and also the reader may doubt whether any issue is 'missing'. Moreover when we are displaying only two issues instead of three in a sloping front to provide more storage space behind we are losing display space for one journal.

PROBLEM NO. 2

Another problem to be faced by the librarians is the over sized periodicals. The solution is to arrange the over sized periodicals, as it is done in the case of over sized books, in a separate sequence.

CONCLUSION

1) It is desirable to display the periodicals.

2) It is more desirable to combine display of current periodicals with storage of all the backnumbers.

3) It may not always be possible to house all the backnumbers of a journal along with the current one on display. A flexible equipment is not satisfactory from space and economy point of view and so is not recommended.

4) At one stage or other the storage may become partial but it is preferable to house as many issues of the backnumbers as possible of a journal (for the year or volume only) and to that effect model No. 8 is recommended which offers relatively more economy of space and money and accommodates in a large number of cases almost all the backnumbers of a journal.

The general conception is that the sloping display units occupy much space and are considered only when the number of periodicals is not too large. But of the three sloping display units Model-6, 7, & 8, it will be noticed that model No. 8 cannot be considered a space consuming unit as even otherwise i. e. even if the periodicals are not displayed but only stored, the storage space required would be nothing less than what is available in Model No. 8 which serves for both display and storage of journals.

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Letter

COVER-TO-COVER TRANSLATIONS

The rapid growth of cover-to-cover translation, specifically of Russian scientific periodicals, during recent years, has become the subject of study for quite a few librarians. Mr Rangra's study of cover to cover English translation (Ann Lib Sci Doc 1968, 15(1), 7-23) is one amongst them.

Lack of a consolidated list of such periodicals in conventional reference tools, and to some extent, rapid changes in title, frequency, subscription rate, publisher etc. pose a problem for such a study.

Had Mr Rangra consulted the list of cover-to-cover translated periodicals published in every issue of the Transatom Bulletin, with all necessary details (except frequency) his study would have been more accurate and up-to-date.

A comparison of Mr Rangra's list with that of the Transatom Bulletin's reveals the following deficiencies in Mr Rangra's list: i) omission of twelve titles, 2) Errors in fifteen titles, 3) incomplete history in the case of 8 titles and 4) changes of subscription rate in the case of 51 titles.

Titles not included in Rangra's List

Ser No.	Title of the Translated Journal	Title of the Original Journal	Translation begins from	Subscription	Publisher
1.	Clinical Medicine	Klinicheskaya Meditsina	1966	$ 30.00	CFSTI
2.	Computer Elements & Systems	Vychislitelnye Sistemy	1962	$ 3.00 (per issue)	CFSTI
3.	Exploration Geophysics	Prikladnaya Geofizika	1966		Plenum
4.	Nuclear Fusion	Yadernyi Sintez	1965	$ 3.00 (per issue)	CFSTI
5.	Pharmaceutical Chemistry	Khimiko-Farmatsevticheskii Zhurnal	1967	$ 80.00	Plenum
6.	Proceedings of the Steklor Institute of Mathematics in the Academy of Sciences of the USSR	Trudy Matematicheskogo Instituta in V. A. Steklora	1965	$ 5 to $ 12 (per vol.)	American Mathematical Society
7.	Proceedings of the V.P. Lebeder Physics Institute of the USSR Academy of Sciences	Trudy Fizicheskogo Instituta im V.P. Lebedera, A N SSSR	1964	$ 27.50	Plenum

8.	Selected Articles of Soviet Studies in Meteorology and Hydrology	Meteorologiya i Gidrologia	1966	$ 125.00	CFSTI
9.	Soviet Public Health	Sovetskoe Zdravookhranenie	1966	$ 18.00	CFSTI
10.	Space Biology and Medicine	Koomicheskaya Biologiya i Meditsina	1967		Plenum
11.	Ukrainian Mathematical Journal	Ukrainskii Matematicheskii Zhurnal	1968	$ 110.00	Plenum
12.	Vestnik of USSR Academy of Sciences	Vestnik Akademii Nauk SSSR	1966	$ 30.00	CFSTI

Errors in Titles

Ser. no. as given in Mr Rangra's list	Title as given in Mr Rangra's list	Correct title
6	Siberian Mathematical Journal	Siberian Mathematical Journal of the Academy of Sciences, USSR, Novosibirsk
7	Russian Mathematical Survey	Russian Mathematical Surveys
11	Applied Mathematica and Mechanics	Journal of Applied Mathematics and Mechanics
12	Funktsional'nyi Analiz	Funktsional'nyi Analiz i Ego Prilozhenia
16	Soviet Astronomy	Soviet Astronomy - AJ
23	Vestnik Moskovskogo Gosudarstvennogo Universiteta: Fizika	Vestnik Moskovskogo Universiteta: Fizika i Astronomiya
46	Soviet Journal of Atomic Energy	Soviet Atomic Energy
51	Journal of General Chemistry	Journal of General Chemistry of the USSR
53	Vestnik Moskovskogo Gosudarstvennogo Universiteta, Seriya Khimiya	Vestnik Moskovskogo Universiteta, Khimiya
55	Liberian Chemistry Journal	Liberian Chemistry Journal of the Academy of Sciences of USSR, Novosibirsko
56	Ukrayinskyi Khimichnyi Zhurnal	Ukrainski Khimicheskii Zhurnal
66	Journal of Analytical Chemistry	Journal of Analytical Chemistry of the USSR
69	Journal of Organic Chemistry	Journal of Organic Chemistry of the USSR (Now Soviet Journal of Organic Chemistry)
133	Geotektonika	Geotectonics
151	Stal (Steel)	Stal in English

The complete history in case of periodicals listed against serial nos. 20, 81, 87, 94, 97, 98, 123 & 147 is not given and the subscription rates in the case of periodicals listed against serial nos. 4-7, 9-11, 15-18, 27, 29, 38, 41, 44, 49-51, 54, 59-60, 63, 66-67, 68, 81, 85, 88, 93-94, 101-2, 109-10, 116-17, 119-20, 125-6, 136-7, 147, 150-1, 156-7, 160, 162 have undergone changes, which can however be seen from any issue of the Transatom Bulletin.

In addition, Industrial Laboratory (Ser No 101), Automation and Remote Control (Ser No 109), Instruments & Experimental Techniques (Ser No 160), and Measurement Techniques (Ser No 162) are published by Consultants Bureau under the editorial direction of Instrument Society of America.

Mechanics of Solids (Ser No 48) is a continuation of Soviet Engineering Journal (Ser No 105). The former is being published since 1966 whereas the latter was published only during 1965.

According to Mr Rangra, the first translated journal is Journal of General Chemistry, which is still in existence. But the list given in the Transatom Bulletin belies this statement. According to which, Vestnik Svyazi (= Herald of Communications) is the first Russian translated journal, published during 1947-49.

Journal of Organic Chemistry of the USSR (Ser No 69) & Defectoscopy (Ser No 107) are now known as Soviet Journal of Organic Chemistry & Soviet Journal of Non-destructive Testing respectively.

Transatom Bulletin also lists with all necessary details, those cover-to-cover translated periodicals which have ceased publication. Another useful source of information is the 'World List of Scientific Translations', cumulative volume, European Translations Centre, Delft, V1(1967)-.

B.K. Sen
Insdoc, New Delhi

Reviews

1. *Trade Associations and Professional Bodies of the United Kingdom, compiled by Patricia Millard. 4th ed., revised and enlarged. Oxford, Pergamon Press, 1968. xiv, 442p. 90s ($18.00).*

The directory, first published in 1962, is being revised after every two years. The size of the present edition has grown considerably in spite of the fact that the definition of an association has remained the same, through the editions, and there have been 160 closures from amongst the associations listed in the previous edition. An increase in the number of entries in such a directory is, perhaps, inevitable because of the 'changing pattern of the structure of trade and industry'. As the compiler has put it, "The importance of exports has created a number of special-interest associations, from freight forwarding and hospital equipment to clothing". New technologies have also promoted new associations. A comparison of the subject index headings of the present edition with that of any previous edition brings out the nature of additions. Thus, between the headings Epileptics and Esperanto, the new edition brings in Ergonomics. Though there is no change in the number of associations under Corsetry, the number of associations under the heading Cosmetics has increased from three to eight. But this is not the only direction in which British trade and industry is, advancing. There are also completely new headings like Automation, Industrial Instruments, Infra-red equipment, Research and Development, etc. and many more which indicate the nature of additions in the present edition.

It can be said unhesitatingly that the present edition will be much more useful as a reference tool.

2. *Indian Packaging Directory 1969. Edited by B.L. Gupta. Bombay, Indian Institute of Packaging, 1969. li, 642p. Rs 45.*

As has been claimed in the preface, the Directory is really the first comprehensive source of information relating to packaging and allied trades. It contains information about 2000 enterprises and organisations in India. To satisfy different types of curiosities like getting the names and addresses of organisations pertaining to a product or service, getting the address and names of products of a party whose name is known, getting the name and address of the manufacturer of a product whose brand name is only known, etc., the directory has been organised into a number of parts and sections. The main parts are the Classified Part wherein the organisations are featured under subject headings, and the Indices Part wherein the organisations have been featured alphabetically by their names. It may be noted that Section 1 of Part D (Indices), which has been named as Alphabetical Corporate Name Index, is the place where the fullest information about an organisation is provided. In other words this part contains the 'main entries' although it is called an index.

In the Classified Part, a scheme of classification has been used and the necessary concomitant of an alphabetical key has also been provided by way of the Alphabetical Index to Products and Services. This has naturally imposed the necessity of having to consult the alphabetical index first for every type of subject approach, however simple it may be. The alphabetical index also is not a very simple list of headings. The usual controversies about the order of citation of the terms in the indexing language, the direction of cross references, etc. are all reflected in this index. Thus if one wants to get the names of the organisations manufacturing laminated paper/plastics flexible bags or Fittings for plywood tea chests or even tea chests, the approach will not be very easy, because the most appropriate approach points for the above subjects appears to be 'Bags, flexible packages or 'paper/plastics' or 'plastics/ paper'; 'Plywood' or 'Chest', and plywood'. Even without multiplying examples one can say that the consultation of the alphabetical part just to get into the appropriate portion in the Classified Part is likely to be quite irksome at times. But this is so for subjects approach only.

It must also be noted that the directory contains other useful information pertaining to packaging, like a glossary of packaging terms, list of members of the Indian Institute of Packaging, foreign institutions and organisations, national standards bodies, national patent offices, basic periodicals, etc. which enhances the usefulness of the directory.

3. Modern Cataloguing, theory and practice, by S. M. Tripathi. Agra, Shiva Lal Agarwala, 1969. xii, 289p. Rs 15.

In the preface to the publication the author has claimed, "my aim has been to present in a nutshell the entire and up-to-date picture of the theoretical and practical aspects of cataloguing along with the modern developments in this field, which directly concern the working librarians and the students of library science in India". In trying to do so the author seems to have done little justice either to comprehensiveness or to up-to-dateness. He has brought in too many topics within its purview as a consequence most of the topics have been inadequately dealt with. So far as the question of an 'up-to-date picture' is concerned, the shortcomings are much too serious. Although published in 1969, the book does not mention anything about the Paris Conference nor the Anglo-American Cataloguing Rules.

So far as the 'practice' part of the book is concerned it may be noted that the basic rules of the A. A. Code, the A. L. A. Code, and the Classified Catalogue Code (C. C. C.) of Dr. Ranganathan have been dealt with examples. It is surprising to find that in the 'skeleton card' for the main entry, according to the CCC (p. 136), the author has preferred to use such terms as 'author's surname, forenames, date', instead of precise terms like, Entry element, secondary element, and individualising element. Such wrong use of terms, the reviewer believes prevents a true appreciation of the logic of the Code.

There are quite a few irritating typographical errors. Seymour Lubetzky suffers most as the 'y' in Seymour has been dropped consistently in a number of places, and his successor in the Code revision C. Sumner Spalding is named as C. Sumner.

However the book may prove useful to students at the Certificate level.

4. Klassifikationssysteme and Thesauri, eine Anleitung zur Herstellung von Klassifikationssystemen und Thesauri im Bereich der Dokumentation, von Dagobert Soergel. Frankfurt (Main), Deutsche Gesellchaft fur Dokumentation, 1969. 224p. DM 28.50.

The pitfalls of operating an information retrieval system, specially an automated system, with uncontrolled natural language have well been realised. As a result a number of thesauri have been designed on various subjects during the last decade or so. But a theory of thesaurus building is just developing and we have only a few contributions on this subject. The present publication would definitely be an important addition. The important chapters of the book are: the structure of thesaurus, concepts and definition - classification systems and thesaurus and their functions in a documentation system, format, operations involved, rules for defining concepts, thesaurus as the base for cooperative documentation, and comparative review of the notations used in different thesauri for data categories.

A translation of this book would surely be welcomed by the English-speaking library and documentation world.

current documentation literature

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British Columbia Library Quarterly [Brit Columbia Lib Quart]	31(3)
British Journal of Photography [Brit J Photogr]	115(5653)
Canadian Library [Canadian Lib]	25(2)
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Library Review [Lib Rev]	21(6, 7)
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